JULY
1953

DIGEST

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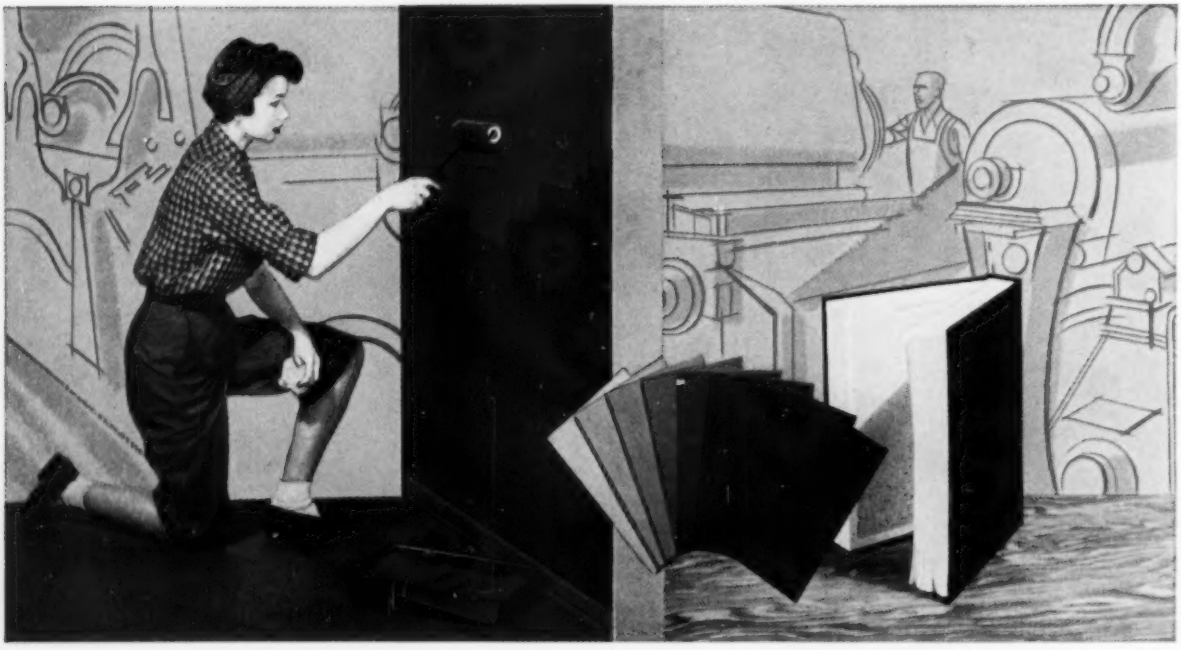
COMPOSING MACHINE sets type photographically from punched card, uses an unskilled operator. It may answer printers' prayers. p35

PLASTIC TAPES—There are over 600 of them now; all defy nature. They do not corrode, erode, or decompose p37

DOW LATEXES FOR THE PAINT AND PAPER INDUSTRIES

New and exciting latex materials create big markets for paints and printing papers



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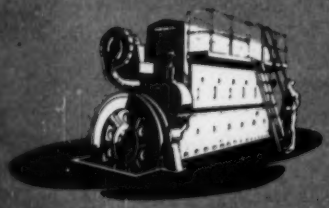

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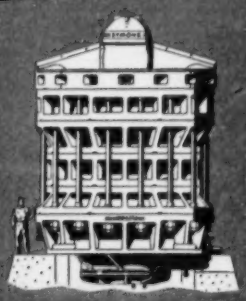

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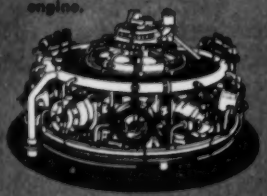

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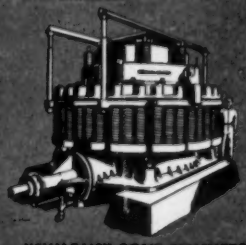

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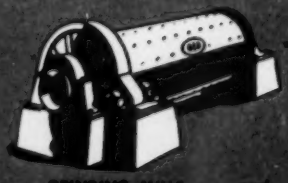

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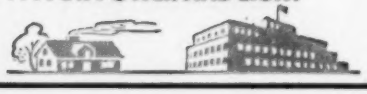

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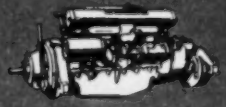

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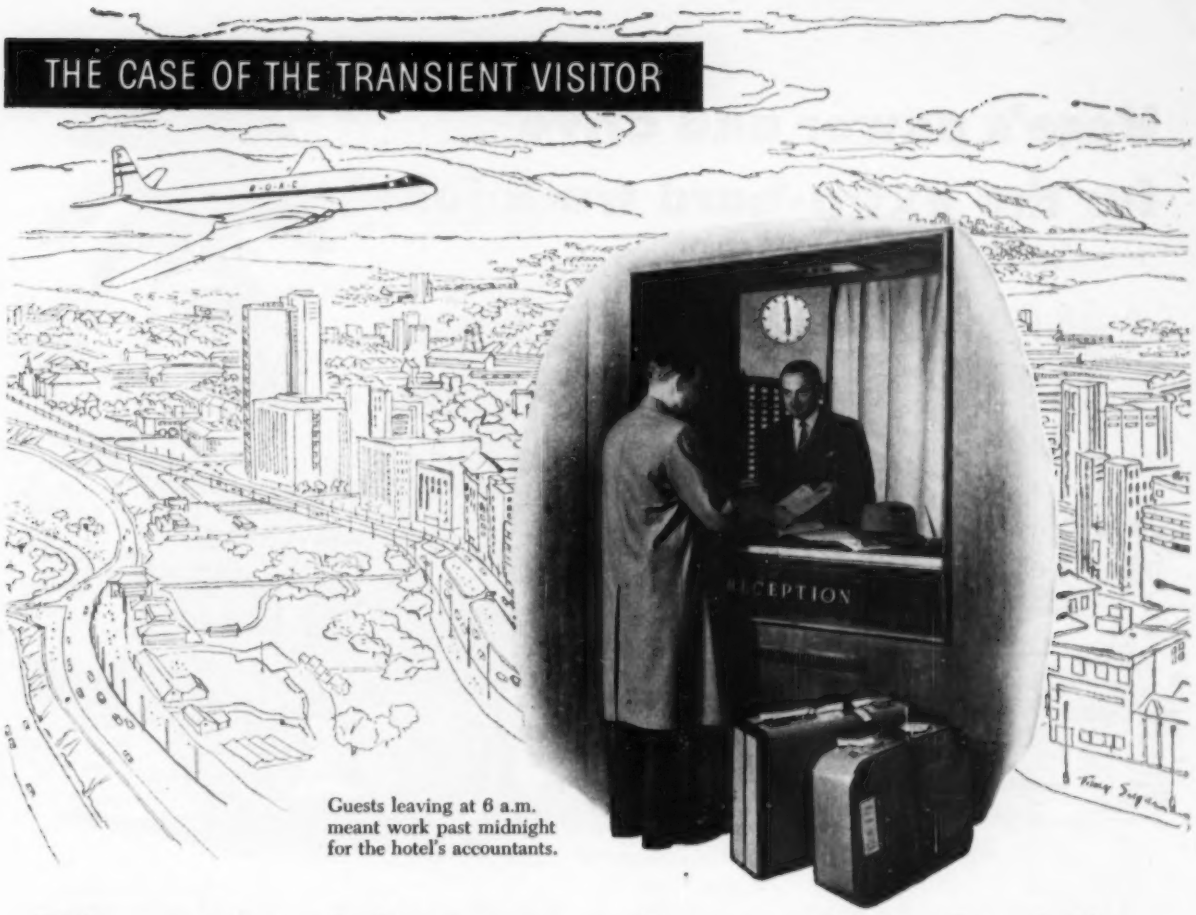
XAP 153

Dealers in Principal Trading Areas Throughout the World

THE CASE OF THE TRANSIENT VISITOR



Guests leaving at 6 a.m. meant work past midnight for the hotel's accountants.

His early rising caused a troubled night

Luthjes Langham Hotel in Johannesburg, known for the all-around excellence of its service, is a South African clearing house for visitors from all over the world. And with Johannesburg now the major stepping-off place for tourists and businessmen arriving in South Africa, business was never better.

Yet A. C. Gelardi, Operational Manager of Amalgamated African Hotels Ltd., was worried. Increasing demands for accommodation had swamped the Langham's hand accounting methods. Staff members were working hours overtime to have bills ready for departing guests. Worse yet, greater tourist-business traffic was expected.

Could this accounting bottleneck be broken? For expert advice, Mr. Gelardi and his Chief Accountant, Mr. C. Hill, called the Burroughs man. After studying the problem, he suggested that the new Series F-100 Burroughs Sensimatic Accounting Machine could turn the trick.

Result? With the new Sensimatic in operation, overtime is eliminated. Guests' bills are available sooner in neater form. The Sensimatic also services sundry debtors, revenue accounts, bar, restaurant and valet service figures. Langham's accounting department is ready to manage new increases in transit traffic.

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Mr. C. HILL, Chief Accountant of Amalgamated African Hotels Ltd., Johannesburg, studies the new Burroughs Sensimatic in the Langham Hotel. With him (standing) is Mr. M. Wahlberg, the Burroughs man who helped solve the Case of the Transient Visitor.

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BUSINESS TRENDS

PROFITS OF AMERICAN CORPORATIONS are running close to the all-time high recorded in 1950. Earnings for the first quarter reached the third best mark in history. They exceeded those for a corresponding period a year ago by 10%.

Sales also are at a peak. Volume is up 15% over the first 4 months of 1952. Only one firm in five runs behind last year's figures. A change is not expected in the trend before autumn.

Industrial production will remain at the postwar peak for a few more months. Signs are already evident that output is beginning to level off. Steel, aluminum, rubber and chemical manufacturers remain optimistic. They expect heavy civilian demand for some time. But watch for cutbacks by fall.

Radio and television producers chalked up the largest gains, profit-wise. Their earnings have jumped nearly 300% in 1953. Television output in the first quarter is 70% higher than for a similar period last year. Number of radios manufactured is up 22%.

Earnings in the aircraft industry have climbed 124%. You can count on the current level of output for the rest of the year. Electrical equipment and food products corporations also show healthy increases.

Next in line are the automobile and auto parts producers, with a 22% jump in profits. Thus far in 1953, 25% more cars have come off the assembly line than during the 1952 peak. Production schedules for July to September call for nearly 2-million. This would be the greatest quarterly volume on record.

But the glut of unsold used cars on the market means a decided drop in the third quarter. To counteract the expected dip next year, automobile manufacturers will make substantial improvements in brakes, headlights, and steering apparatus. Demand for trucks will hold steady until winter. Output is 4,000 per week ahead of last year.

Utilities and railroads make a considerable contribu- to the over-all rise in earnings. This was evident in the 1950–1951 period when all profit records were broken. These two industries are almost completely exempt from the excess profits law.

Tobacco and building materials companies also are thriving. In the latter industry, construction is up 7%. This is significant as it is a barometer of U. S. business conditions. Tremendous gains are projected in commercial buildings, highways, and bridges. Home building, however, may fall about 10%.

Textile profits continue the ascent begun in 1952. Mill consumption of the four leading fibers—rayon, silk, cotton, and wool—stays high. Output will average about 3% more than in 1952. But proposed purchases by the U. S. Army of clothing from overseas exporters may reverse the upward trend in production.

Long-term growth prospects are behind optimism for increased profits in the chemical industry. Excessive inventories have kept this year's advance down to 6½%. A decline in production may be encountered before 1954.

Coal producers suffer the worst earnings setback. Their profits have slumped 54% in 1953. They will continue to join the independent oil producers in fighting for high import quotas on foreign petroleum. Farm-equipment companies are the only other group absorbing stiff losses. Heavy crop surpluses caused their misfortune.

Wealth held by consumers has risen more than 50% since end of World War II. It now exceeds $800-billion. Nearly 30% is in the liquid form; 6% is in insurance. One-half of the families in the country have a net worth over $7,500. Thus, consumer purchasing power will be a major factor in holding corporate profits at the present rate for some time.

U. S. AIR FREIGHT flown back and forth across the North Atlantic reached 18.5-million lb. in 1952. This compares with 5.4-million in 1947. But the percentage of total cargo carried by American planes fell sharply from 73% to 37%. Foreign airlines now account for 62.7% of over-all volume. Back in 1949, U. S. planes flew 319 all-cargo flights across the Atlantic, or 81% of the total. By last year, the situation had practically reversed.

American companies are finally awakening to the ever-growing importance of moving cargo by air. They have set their target for 650-million lb. annually. In their bid for air-freight supremacy, the airlines intend to lower rates. Also, cargo planes will be made more easily available to satisfy demand.

Most frequent air-cargo users in U. S. are manufacturers of items whose value warrants additional freight expense. Producers of drugs and automobile and machine parts are the principal firms resorting to ocean air transport. Sample goods also are regularly shipped by air.

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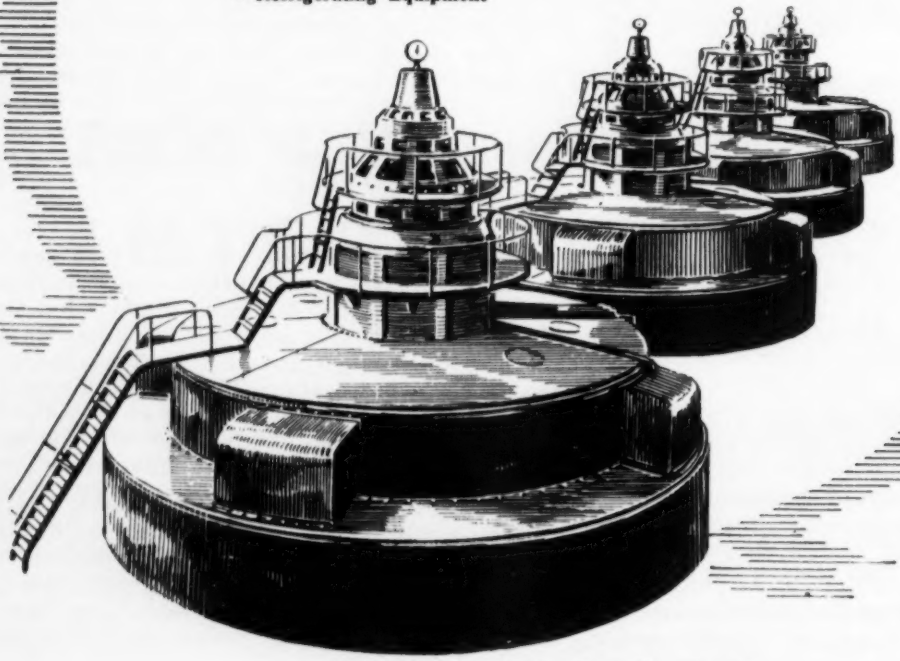
- Electrical & Optical Measuring Instruments
- Light Bulbs
- Household Electric Appliances



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WASHINGTON REPORT

WORLD TRADE WINDS, as Washington sees it, are setting toward more East-West trade and against expanding commerce with "dollar market." The protectionist offensive in Congress and the peace offensive in Moscow are the two big forces behind the shift.

The Reciprocal Trade Agreements Act is awaiting action by the House Ways and Means Committee. There is a chance now there will be no action on it until a fall session—if then. Failure to renew the law by year's end could lead to a tariff war in the West. Postwar GATT trade agreements will cease to be binding next January 1 if the President is not given power to renew them.

U. S. trade barriers are bound to go up even if the Reciprocal Trade Agreements Act is extended. Tariff boosts are built into the law in the escape clause. There is no chance of knocking that out this year, little likelihood of doing so next year.

The Joint Congressional Executive Committee being set up to study long-term U. S. commercial policy will be dominated by high-tariff men and probably will turn in conservative recommendations. Just how conservative they will be will depend on who appoints the chairman—the President or Republican leaders in Congress.

Moscow's peace offensive, meanwhile, is fanning Europeans' hopes of finding alternative markets and sources of supply in the East. There is more and more evidence that the Kremlin will encourage selective increases in trade with Western Europe and Southeast Asia to achieve specific political objectives.

Europeans' fears of an early U. S. recession will lend support to efforts to insulate their economies from the U. S. business cycle and to tie them closer to Communist markets.

Senator McCarthy's drive against Allied, particularly British, trade with Red China may not reverse the trend, might even accelerate it. The senator wants to stop all trade with China, not only exports of strategic goods.

The British will not go along with this. But McCarthy is getting a lot of support in the U. S. He may succeed in pushing the administration into demanding a total China trade embargo from its allies.

That might destroy the complex fabric of inter-Allied agreements for controlling strategic exports to China which has been negotiated in the last 2 years. The net result might well be more, not less, Allied trade with Peking.

The China trade issue will be injected into Congressional debates on the foreign-aid bill. Support is building up in Congress for denying aid to nations trading with Red China. The administration probably will be able to eliminate any such provision, but it might be squeezed into the bill. The China trade issue, at the least, will be an effective argument for cutting aid drastically.

No dramatic increase in the over-all volume of trade with the Soviet bloc will take place, despite the general trend in that direction. Major economic emphasis in the Soviet empire since the war has been on achieving self-sufficiency. Foreign trade inevitably is a marginal factor in a rigidly planned economy. Also, the prewar Central European trading community on both sides of the Iron Curtain has been largely liquidated.

What you will probably see is an increase in the number of one-shot trade deals between East and West, particularly deals with the Soviet Union itself. Everything indicates that the Kremlin will use trade as a major weapon in the struggle with the free world. That was the theme of Stalin's last official pronouncements.

But Moscow's trade offers will be aimed at specific political objectives. The offers will get headlines but will have little effect on the total volume of world trade. Look for the Kremlin, for example, to offer to buy products in Western Europe that are shut out of the dollar market by U. S. trade barriers. But the Russians probably will still try to tie such purchases to purchases of strategic goods.

The pattern is apt to be even more complicated in the Far East. Already, for instance, the Russians are offering agricultural machinery to Pakistan in quantity at moderate prices. Apparent objective is to cut the Japanese out of the Pakistan market and put more pressure on Tokyo to trade with Red China.

But the trend toward less free-world trade with the dollar market will affect more than East-West trade patterns. It will put pressure on Western Europe, the Commonwealth, perhaps Japan and Latin America to tighten trading relations among themselves. Some U. S. officials foresee the formation within the next few years of a "neutral" trading block between the dollar and the Communist markets. An expanded European Payments Union might provide the financial framework.

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REPRESENTATIVES IN ALL OTHER PRINCIPAL COUNTRIES

JULY 1953
VOLUME 8 • NUMBER 7

McGRAW-HILL
DIGEST

- Not all cartels died because of World War II. There are still enough of them alive to control a sizeable piece of world trade
- A UN group, ECOSOC, knows this. So it will set up an international control body that will try to curb restrictive business practices like cartels
- It's still too early to tell how effective the new organization will be. About its only penalty: unfavorable publicity.—An original Digest article

Cartels: UN Fights Them

PRIVATE CURBS on international trade are on the receiving end of an offensive by the United Nations Economic and Social Council (ECOSOC). The council is considering a recommendation by a special committee to set up international machinery to wage diplomatic warfare on private agreements designed to restrain trade. Its decision one way or the other will come during its meeting in Geneva (June 30 to August 7).

In the past, international trust busting has been considered a "never, never" land into which only quixotic idealists would think of venturing. But the officials who labored for 2 years to force the ECOSOC proposal are convinced that restrictive business practices threaten economic expansion.

True, World War II exploded the brain centers and snipped the tentacles of many of the giant international cartels of the 20's and 30's. But restrictive international business agreements still control a wide band of free-world trade.

U. S. State Department has evidence that over 20 major international cartels are flourishing today outside the U. S. And the U. S. government since the war has taken legal action against 40 odd business arrangements allegedly restricting international trade in which American companies were involved.

There is reason to believe, too, that if and as government shackles on trade are dropped, private businesses will try to replace them with their own controls. Western European steelmakers, for example, met recently in Paris and drafted an export-price-fixing agreement. They are reported to have agreed as well on a plan to divide the internal Western European market.

These facts spurred the UN to try to devise international curbs on restrictive business practices. ECOSOC set up a special committee in September 1951 of representatives of ten nations to wrestle with the problem. The committee succeeded this spring in hammering out a compromise proposal for an international control body that, it believes, could check cartelization.

The new organization would look like this: a representative body consisting of a delegate from each member nation would have final authority. It would decide by majority vote (1) what restrictive international business practices would be investigated, (2) in what order of priority complaints should be examined, and (3) what remedial action should be recommended to the governments concerned.

The representative body would delegate many of its powers to a smaller executive board of delegates from different types of economies and the most important trading countries.

An executive secretariat would collect information from governments and other sources on restrictive business practices being investigated. It would pass this on to an advisory staff of technical experts.

This staff would analyze, evaluate, and interpret the facts of a given case under consideration. It would hold hearings of the interested parties. Then it would report its findings and interpretation to the representative body. It also could make recommendations for remedial action if requested to do so by the representative body.

The anti-cartel organization would investigate and take action on a complaint by one of its members only if the restrictive practice complained of involved one or more private or public commercial enterprises that effectively controlled trade among a number of countries in one or more products.

Restrictive practices that the organization would go after include: price fixing, dividing markets or customers, fixing sales or purchase quotas, discriminating against particular enterprises, limiting production, hampering technological progress, using

"Progress would be slow . . . first tackle the easiest cases"

patent licensing to control production or sales.

It is impossible to predict at this stage how effective the new organization would be against international cartels. It would have no police powers to enforce its recommendation, but it would be able to focus publicity on private agreements, which always have been secret in the past. Member nations would be committed to take legal action against those practices by their businessmen of public commercial enterprises that the organization found damaging to free-world trade. And they would be under considerable diplomatic pressure to do so.

Progress Would Be Slow

Authors of the proposal admit progress would be slow at first. They think the organization should start cautiously and tackle the easiest cases first. That way they hope it gradually could build up a body of international legal precedent and forge effective administrative procedure that eventually would foil the most flagrant attempts to hobble the trade of the free world.

Several safety valves have been built into the proposed anti-cartel machinery to protect it from breaking down. Delegation of wide authority to the small executive board would keep the organization from being flooded with absurd complaints by small and diplomatically inexperienced nations.

A member nation would not have to disclose information that it thought would endanger its national security. Also, confidential information given to the organization by a member would be kept quiet if the member requested it and if publicizing the information would damage legitimate business.

A run down of a few postwar cartel operations gives some idea of the density of the jungle in which the new organization would operate. One that played the full scale of restrictive business practices was the alkali cartel, broken up by the U. S. government a few years ago. Parties to the agreement were a half dozen U. S. chemical companies, Imperial Chemical Industries, Ltd., of England, and some key European firms.

They gave each other exclusive sales rights in their own national markets. U. S. producers were allotted exclusive sales rights in Iran, Iraq, Egypt, and India. Central and South American markets and the China market were divided among American and European producers.

Cartel members undertook to police independent producers in their respective countries. If a member failed to keep an independent producer in his country out of the cartel's export markets, his own export quotas were cut.

The cartel established and maintained high prices. Prices were slashed temporarily in several countries when independents attempted to build competing plants. They were boosted again as soon as the competition collapsed.

Another example is the operation of a group of British, German, Swiss, Danish, and French pharmaceutical firms that allegedly have tied up the European market for a wide range of basic pharmaceutical products. It is reported that their agreement lays down strict rules for production, sales, prices, and export territories for each product involved.

Cartel in Plastics?

Imperial Chemical Industries, Ltd., and Belgian Solvate allegedly have forged a cartel agreement for the production and sale in Europe of certain plastics. According to reports, they have set up a joint subsidiary on the continent in which Belgian Solvate put up the capital and ICI the patents and technical know-how. The subsidiary reportedly has been given exclusive marketing rights in Europe and parts of the Middle East but is forbidden to poach in British or sterling-area markets.

Swedish authorities report that a number of foreign firms have teamed up with Swedish companies to regulate the international market for electric meters. The agreement allegedly provides for price fixing and division of markets.

The U. S. Department of Justice currently is taking legal action against four rubber companies allegedly teamed up to control international trading in latex rubber products. The four companies are U. S. Rubber Co., Dunlop in Britain, Dominion Rubber Co. of Canada, and the Italian Farelli Company.

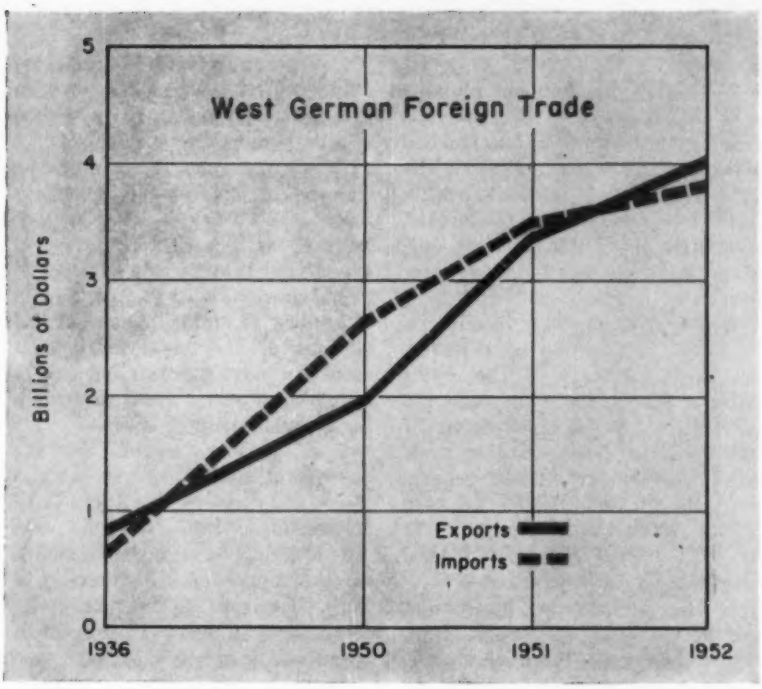
Justice Dept.'s Charges

The Justice Department alleges that they have set up joint companies in Britain, Italy, the Netherlands, France, and Canada, each with exclusive market territories. It accuses the group of price fixing, research and patent pooling, in addition to dividing markets.

The special ECOSOC committee also reported the current existence of a European cartel that fixes prices and sales terms on heavy nonferrous metals—brass, copper, zinc, copper alloys, and yellow metal products. It claims that sixty-odd Belgian, Swiss, French, British, and Swedish firms are involved and that the cartel is run by a central committee and permanent secretariat.

It is still too early at present to predict exactly what action ECOSOC will take on the proposed international cartel control organization. It could draft a final treaty during this summer's meeting and submit it to governments for ratification. Or it could call for an international conference to draft a final treaty.

The council may postpone final action until the foreign economic policy of the new U. S. administration becomes clearer. Reason: several European countries feel strongly that international action against private trade restrictions must go hand and hand with reductions of governmental trade barriers. They may be reluctant to push an offensive against cartels if it looks as though there were no chance of lowering official U. S. bars to imports.



West Germany's Big Year

Chancellor Adenauer has brought West Germany close to a sound economy. But the opposition may force him out.—An original Digest article

FRANKFURT—This year will become the year of decision for West Germany. The Germans will have to choose between a Western-oriented, free-enterprise government or a government dedicated to socialization of industry.

The two economic and political philosophies will go on trial before the West-German voters this fall when Germany elects a new parliament. Chancellor Konrad Adenauer's coalition government, looking toward a free-enterprise economy as the answer to Germany's economic problems, will face Erich Ollenhauer's powerful Social Democratic party.

The Social Democrats are committed to socialization of Germany's basic-materials industries. And they are bitter foes of the Allied-German contractual agreements and the European Defense Community.

The election will take place during a year of unprecedented production and over-all economic improvement in West Germany. Production indices in the majority of West Germany's industries are well above pre-war levels. Unemployment is dropping slowly but steadily; the country has reached a stage where outside aid (with the exception of West Berlin and integration of refugees from the East Zone) is no longer required; off-shore procurement orders to German industry are in sight as soon as the EDC treaties are ratified by all partners.

Chancellor Adenauer and his capable Minister of Economics Ludwig Erhard will be able to present to the German electorate an impressive slate of achievements, in both political and economic fields.

Economically, Adenauer can point to:

• **The German currency** today is one of the hardest of all currencies in Western Europe. The Deutsche Mark was recently used as the basis of accounting in the latest trade agreement between Germany and Spain. It is now selling at only an 8% discount on the free Swiss currency exchange. When the Federal Republic was constituted, only 19 Swiss Francs bought 100 Deutsche Mark; in January 1951, it took 78½ Swiss Francs to buy 100 Deutsche Mark; and in January 1953, 90 Swiss Francs were required.

• **Rate of employment** is continuing to develop favorably. As of mid-April 1953, the number of unemployed in West Germany had dropped to 1,330,000. Even with more than 1-million unemployed, full employment now exists in the major industrial areas and nearly full employment in secondary industrial areas.

• **Industrial production** has been expanding rapidly since 1948, the date of the currency reform and of the start of large-scale U. S. aid. This expansion is best illustrated by the index of industrial production for these years (1936 representing 100):

1948	63.0
1949	90.0
1950	114.0
1951	135.8
1952	140.1

The 1953 average is expected to be around 150, and further increases amounting to roughly 7% annually are expected by Bonn officials for the next couple of years.

Another measure of West Germany's industrial recovery is the gross national product. In 1948-49, the first year of the Marshall Plan, this amounted to 74-billion DM; in the fiscal year ended on June 30, it is expected to exceed 130-billion DM.

• **West Germany's reputation** as the "work shop" of Western Europe is further substantiated by the fact that the German balance in the European Payments Union reached $442-million at the end of March 1953. This balance would have been even higher if West Germany had not paid $15-million to the UK and an equal amount to Switzerland during March. It is probable that Germany will exceed its $500-

million quota within the next 2 months.

The government can point to an over-all surplus in its international balance of payments, and also the fact that West Germany's reserves of gold and foreign exchange are probably the greatest since before World War I. As of February 1953, German reserves of gold and dollars reached $695-million.

Real wages of industrial workers stand at 114% of 1938, and consumption at 102.6% of 1936.

During the past 2 years, approximately 800,000 housing units were constructed and another 400,000 are planned for this year.

Despite this impressive record of economic recovery, Germany is still plagued by some severe economic headaches:

1. The country's major problem today is that of absorbing refugees and expellees from the East. About 10-million people, or one out of every five persons living in West Germany, are refugees from the Soviet Zone or the satellite countries. The problem of housing these refugees and integrating them into the German economy is one of major proportions, for which no easy and quick solution is at hand.

America has spent the equivalent of DM 225-million for aid to refugees and it appears probable that aid in some form or other will have to be continued. The importance of this problem is recognized by everyone since large groups of unemployed, embittered refugees would constitute a potentially explosive element of the population.

2. The "Berlin problem" remains serious. In January 1953, Berlin's index of industrial production had risen no higher than 47% of the 1936 level. During the same month, it must be remembered, the level of industrial production in West Germany stood at 140% of the prewar level.

About 250,000 West Berliners, over 20% of the total labor forces, are still unemployed. The city's balance of trade also mirrors the extremely depressed condition of the Berlin economy. At this time, only about 40% of Berlin imports are paid for by exports. To keep Berlin afloat, a continued heavy drain on the West German federal budget must be expected.

3. The supply of investment capital remains extremely tight. Interest rates are high: 7 or 8%. Some Allied observers feel that there exists an excessive fear of inflation, particularly on the part of government officials. This feeling leads to perhaps excessively conservative credit policies. Nevertheless, the West German rate of investment compares favorably with that of other European nations.

4. The present coalition government is pushing hard for free enterprise and competition, but the tendency toward the forming of "institutional blocks," which clamor for special privileges, appears to be on the rise. Some Allied observers feels that Germany still does not have real faith in the competitive idea.

5. Germany's tremendous export drive, which reached its peak in mid-1952, appears to have levelled off. Although the over-all export situation continues to be favorable, competition is developing in certain major export fields. Germany will have to fight hard to retain and expand her present rate of exports.

The seriousness of the export situation is quite apparent to German officials who realize that Germany must maintain her export surpluses to settle debts and transfer current earnings abroad.

6. A serious drain on the German economy are the occupation and defense costs. Until December 1, 1953, Germany has agreed to pay $142,800,000 a month for the support of Allied troops in West Germany. The European Army Treaty should go into effect December 1.

Between then and July 1, 1954, Germany will have to pay $226,-100,000 a month for defense. Allied forces will receive $95,200,000 a month and the rest will be used for the establishment of the 500,000-man West German military forces.

With this predominantly favorable balance sheet, Chancellor Adenauer's government will go before the voters this fall. His recent American trip has added considerably to his stature and has won for him and for the present government a number of friends both abroad and at home. It is probable that Adenauer's "businessmen's government" will be able to count on the support of the present U. S. administration.

But only the unrealistic observer would underestimate the power of the socialists in Germany. If the socialists can come to terms with some of Germany's "neutralist" blocks, they might obtain a majority in the Bundestag and form a coalition government of their own. The socialists have stated publicly that they will "amend" the contractual agreements and the EDC. This "amendment" could spell the death of present European integration efforts. On the economic front, large-scale socialization would inevitably follow a socialistic victory.

INDUSTRIAL AND AGRICULTURAL PRODUCTION

(Base Year - 1936=100)

	1948	1949	1950	1951	1952
Mining, Quarries	74	90	101	111	116
Food, drink, tobacco	80	99	113	120	124
Textiles, Clothing	51	87	114	125	117
Chemical	71	102	113	160	158
Iron, Metal Mining	42	66	87	105	109
Metal Working	--	95	127	170	178
Transportation	--	55	87	118	129
Electricity, Gas, Steam	112	136	155	182	191
Construction	--	82	102	119	121
Food Production					
Agricultural	--	79	93	104	110
Industrial	63	90	114	136	140

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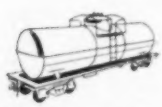
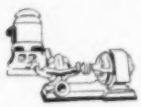


WESTVACO INDUSTRIAL CHEMICALS



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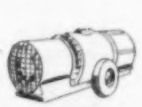

JOHN BEAN SPRAYERS

REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Tropical Styling Marks Modern Puerto Rican Shoe Store

Tropical styling combined with customer comfort in a relaxing atmosphere makes for increased sales at Almacenes Gonzalez shoe store in San Juan, Puerto Rico. It is the only two-floor retail store in the city. The first floor carries children's shoes, women's sport shoes, and men's shoes. The second floor, shown here, carries a high-grade line of women's shoes. A variety of colors and flower decorations add to the inviting atmosphere of the store. Besides catering to local trade, Gonzalez finds store pulls in a lucrative tourist trade.—Boot & Shoe Rec, May 1, p74

Makes Rare Zirconium For Atomic Submarine

When Westinghouse Electric Corp. started work on the first submarine reactor, large quantities of scarce zirconium metal were needed in a hurry. So they set about making their own.

The job was done in 14 weeks and production of the rare metal went from a few hundred pounds to several thousand in this short time.

The process begins when porous chunks of coke-like zirconium metal are loaded into a big tank. Inside the tank is a container of zirconium tetra-iodide—a combination of zirconium and iodine. A series of 4-ft.-long hairpin-shaped zirconium wire filaments are hung from the cover of the tank that is put in place and sealed with a pure gold gasket. After the tank has been heated in a salt bath and evacuated, electric current is passed through the zirconium wire. This starts a chemical reaction.

Zirconium tetra-chloride vaporizes and deposits pure zirconium on the hot wire filaments. Free iodine migrates back to the remaining sponge material, and the cycle begins again. Crystal bars eventually build up on the wire hairpin. They are chopped into small pieces, melted into ingots, forged and rolled.—Power, May, p214

How To Keep Molds Clean

Two years of research by Gulf Oil Corp., Pittsburgh, Pa., went into the development of a mold spray oil for use on high-speed, glass-container forming machines. The spray, called Gulf Moldgloss A, combines colloidal graphite, other additives, and oil.

When blank molds are sprayed or swabbed with this solution, they are given a uniform coating of carbon and remain free from excessive build-up for long periods and over a wide range of operating temperatures. The spray is also suitable for general use as a lubricant on glass-forming machines where a low-viscosity oil containing colloidal graphite is needed.—Ceramic Ind, May, p15

Heated Screens Pay Off in Good Plant Operation

Three heated-screen vibrator units installed in the Dawson Daylight Coal Co.'s preparation plant stepped up screening performance and reduced screen changes. Formerly, $\frac{1}{4}\times 0$ coal was partially wasted; now it is recovered.

Located beneath three raw-coal vibrating screens, the heated units are put into service when $1\times 10M$ or $1\frac{1}{2}\times 10M$ commercial stoker is being made. They receive raw $\frac{1}{4}\times 0$ from the three primary vibrators and separate it into $\frac{1}{4}\times 10M$ and $10M\times 0$ fractions.

Before installation of the new units, $10M\times$ 0 material was diverted to the washing system. There, the $28M\times$ 0 fraction was lost. Also, wet or damp coal was not screened completely and some of it passed over as coarser material. Now this is recovered, the $10M\times 28M$ being loaded with the commercial stoker and the $28M\times 0$ being loaded with the raw carbon. —Coal Age, Apr, p98

Television In Bank Saves Work and Space

Linking six tellers to a central accounting room by a closed circuit television system (McG-H Digest, Mar '53, p34) has speeded bank service and cut down clerical work.

Now in use at the New York Savings Bank, the new system allows tellers to check the signature and bank balance of any account without leaving their windows. An inter-communication system is used with television to give the bankbook number to the accounting room. For checking, the customer's signed account card is taken out of the file and put in front of the television camera. The teller then compares the information on the withdrawal slip with that on the account card. The television screen is built into the counter in his cage.

The system uses only one camera. When the accounting room puts a card in front of it, the image shows on all screens at all windows. To avoid confusion, each teller is assigned a certain portion of the screen.

Besides the present advantages, bank officials see it as a means of cutting overhead. In high-rent districts, it will be possible to maintain only a small office. A closed television circuit could link it directly to the main accounting office miles away.—Electronics May, p20

Acrylic Respirators

A lightweight acrylic chest shell and portable respirator has been developed by J. J. Monaghan Co., Denver, Colo. The entire unit consists of six Plexiglas shells in graduated sizes, a lightweight royalite case finished in gray, a power unit, battery unit, and two pressure hoses. Weight of the power unit is 44 lb., the battery unit weighs 37 lb., and the shells, hose, and case complete weigh only 27 lb.

When the unit serves as a clinical unit, the acrylic shell adds materially to the morale of the convalescent. Covering only the body area from just below the neck to the waist, it permits a freedom of motion and a gradual return to normal activity that would be impossible with bulky iron lungs and tanks.

A rubber seal around the shell, which inflates for an air-tight fit over body contours, is formed so that it fits tightly over the acrylic; no cement is used. The new unit can be fitted on a patient in less than 30 seconds.—Mod Plastics, Apr, p176

New Method Kills Hogs

Using gas to put hogs to sleep before slaughter saves time and money at the Austin, Minn., plant of Geo. A. Hormel & Co., meat packers. The new method uses carbon dioxide gas. The hogs are conveyed through a gassed tunnel. As the stunned hogs come out, they are shackled by the hind legs to an overhead conveyor and slaughtered.

Formerly the animals were put into narrow pens and workers had to shackle the hogs while they kicked and squealed. It was hard on employees and fatigued the animals, possibly affecting meat quality.

The new system assures accurate sticking, increases animal respiration, and produces higher blood recovery.—Food Eng, May, p203

Converted Fans Cool Overheated Engines

New Orleans Public Service Bus Company has solved a tough overheating problem in bus fleet engines. In May 1951 when average temperature in New Orleans was 85°F., NOPS had 104 failures due to overheating. Last year the number was cut to 20.

The solution was hard to find, but easy to put into effect once they found it. NOPS worked closely with the manufacturer of their buses. The manufacturer explained that normal dust and dirt collection in radiators was causing efficiency loss in the cooling system. The simple answer was to get more air.

To do this the manufacturer recommended changing of engine fans from pusher to sucker type. NOPS brought six sucker fans and found they were the answer. But equipping the whole fleet with new fans would be expensive. Then NOPS maintenance men suggested converting the sucker fans in their own workshop by simply reversing the angle of the blades. With tools made of scrap, they did the job in a few days.—Bus Trans, May, p38

Straightline Machine-Tool Production

New 740x300-ft. plant of Norton Co. produces grinding machines with straight-line production methods. Raw materials are received at one end of plant, proceed through five 60-ft. bays to assembly and shipping area. Line production has cut handling distances; a heavy grinding machine wheel slide now travels only 554 ft., instead of 3,140 ft. as before. Other features: new types of machine tools, special handling equipment, air-recirculating dust control, forced ventilation system. —Am Mach, Apr 13, p201

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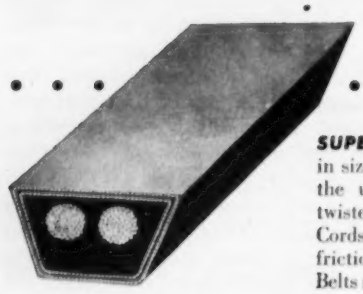
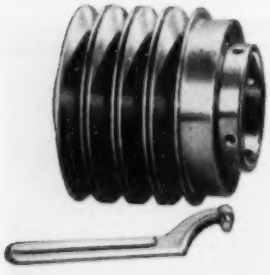
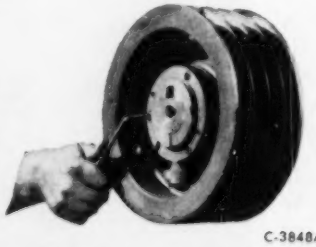


***SUPER-7* V-BELTS** are available in a wide range of types in sizes and sections to suit all operating conditions. In the upper section of the belt, rayon cords—firmly twisted—are accurately placed to carry heavy loads. Cords are impregnated with gummed rubber to reduce friction and heat. They cannot rub against each other. Belts retain proper tension over long periods of operation.



***VARI-PITCH* STANDARD SHEAVES** (left) are available in speed variations of 9% to 28% on drives of 1 to 300 hp. *Vari-Pitch* Wide Range Sheaves offer stepless speed control for 1 to 40 hp. Speed range up to 2 to 1. Both available in stationary or motion control. *Vari-Pitch* Speed Changers give smooth, accurate speed control at turn of a handwheel. Stepless speed range: 3¾ to 1; capacity: 1½ to 75 hp.



***MAGIC-GRIP* SHEAVES** can be mounted or demounted faster than any other sheave you can buy. Available in 1 to 12 grooves, for A, B, C, and D belts, 1 to 250 hp, they align easily, run true, will not slip or jam. Shaft and bearing damage is held to a minimum, because sheaves don't have to be hammered or pried off.

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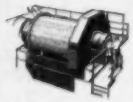

Equipment for Ore and Rock Processing

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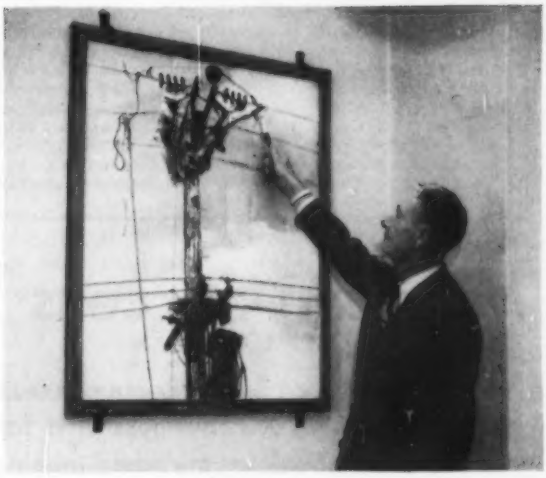
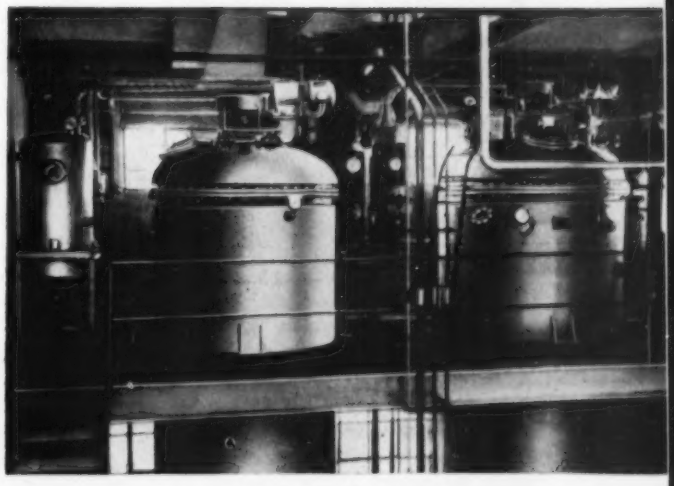


. . . reduce errors through pictures

To make sure everyone in supervisory discussions is talking about the same thing, the Los Angeles Dept. of Water and Power uses pictures of actual installations. When discussing peculiarities of certain jobs or changes to be made in standard equipment, the supervisor can point to similar pictures and show the men what to expect and what to do on the job. The chances for confusion are greatly reduced. Supplementing the pictures is a large blackboard where diagrams, new tools, configurations, locations of pole-top components, and new equipment can be drawn.—Elec World, May 4, p93



. . . upgrade fish oil with wet steam

Polymerization process developed by Bamag-Meguin A. G. of Germany makes fish oil (1) edible—about as digestible as olive oil, (2) permanently tasteless and odorless, (3) stable, even after 3 years of storage.

Process hinges on use of "wet" steam produced in a generator designed by Bamag. The steam is saturated with the water in the form of a fine fog-like dispersion. Polymerization takes place at 200 to 250° C. and under high vacuum. Before polymerization, pretreatment of oil includes neutralization, bleaching, and stearic elimination.

Commercial plants are operating in Denmark, England, Germany, Iceland, and Norway. Typical plant capacity is 20 to 50 tons a day of roe oil. Product goes into such foods as margarine (as much as 40%), mayonnaise, fish-preserve oil.—Chem Eng, May, p122

. . . sell machine tools in the U. S.

A railroad car outfitted with 14 British machine tools is making a nationwide tour of the U. S. British Industries Corp.'s International Machinery Div., a U. S. firm, is staging the trip to spur sales for the 27 British machine tool makers for whom its acts as U. S. distributor. The car is set up as a machine shop with technicians to demonstrate the machines in operation for prospective customers.

The U. S. machine-tool shortage has just about ended with makers catching up with Korea demand. So British machine-tool companies figure the traveling machine shop will help them hold at least part of what was once, and they hope again will be, a lively market.—Business Wk, Apr 18, p166

Portrait Of Sears, Roebuck in Mexico

Recently, the National Planning Association, Washington, D. C., released the first in a series of case studies of U. S. companies operating abroad. It is a portrait of Sears, Roebuck & Co.'s Mexican business. Further studies will probably cover U. S. companies in the Far East, Middle East, Europe, and South America. NPA says the entire series will deal only with perhaps half a dozen selected companies, trying to show how foreign investment can be profitable and at the same time become a valuable economic and social asset to its host country.

H. Christian Sonne, Chairman of the NPA Board of Trustees, has this to say about the studies: "A long-range objective is to show—first, that it can be done, and then to present evidence which may ultimately prove to be a guide for all American industry operating in foreign countries."

Mexican Success Story

Study of seven Sears, Roebuck retail stores in Mexico shows how a U.S. business in a foreign country can help its host's economy while making money

SIX YEARS AGO Sears Roebuck & Co., leading U. S. mail-order house, opened its first store in Mexico. Now it has seven stores scattered all over the country. And each store has definitely established itself as an important contributor to local Mexican economy.

Sears decision to set up business in Mexico, according to NPA's report, was based on three assumptions—two of them wrong.

The first assumption was that Mexico was growing—a good business bet. This assumption proved correct. But Sears also regarded its market as essentially an upper-class one, and it expected to be able to import about 70% of its stock-in-trade from the U. S.

Sears was wrong on both these assumptions. Customer reaction proved Sears market was just about everybody with a peso. The second assumption got its death blow with a Mexican currency crisis. A tight embargo on imported consumer goods was clamped on. So to stay in business, Sears had to buy as much as it could in Mexico itself.

The company's know-how made this a fairly simple changeover. In the U. S., Sears buys from manufacturers who can make high-quality goods that Sears customers want, at prices they want to pay. If it is necessary, Sears experts will even help manufacturers get their assembly-lines rolling. This same practice was put to work in Mexico. And it proved successful.

But what does Sears contribute to the Mexican economy? According to NPA, Sears rates high on the four criteria set up to measure a successful American company and its impact on the local economy. Here is the way NPA evaluates Sears:

- Contributions to the basic economy: Sears is buying 80% of all its merchandise from 1,300 Mexican suppliers.
- Contributions to living standards: Sears' 1,900 employees, all but 19 of them Mexicans, have gained better living standards, wages, working conditions. By supplying better goods at lower prices, Sears helps boost living standards of customers.
- Institutional benefits: Sears has helped speed formation of local capital. It has introduced new management skills in Mexican retailing and advertising.
- Cultural benefits: These are hard to measure. The NPA report points out that Sears has adapted itself to Mexico's fast-moving industrial revolution, serving a middle class just beginning to be able to buy a wide range of goods.—Business Wk, May 9, p168

Increases Bobbin Weight 20% in Warp Spinning

A few simple changes allowed one mill to increase the weight of its warp bobbins by 20%. It now gets 0.52 lb. of 15s warp yarn, a 50-50 rayon-acetate blend, on a 10-in. bobbin with a 2½-in. ring. Formerly, the mill got 0.42 lb. per bobbin.

The mill installed a production builder, reversed the builder cam, increased lays per inch, and made the mechanical adjustments necessary for these changes. The builder cam was reversed so that the laying-on stroke is on the way down and the tying-on stroke is on the way up. This change caused some sloughing in spooling; so lays per inch were increased.

Mechanical changes involved adjusting stroke, chain length from pulley to cam follower, and picks to give the desired build. Trial and error helped find picks and proper chain length to give the desired taper and stroke.

Using the lay gear suitable for 15s as a basis, the mill then determined by ratio and proportion lay gears for yarn numbers from 5s to 30s. Now the mill knows the proper lay gear for any yarn number it can spin.—Textile World, May, p114

New Developments Will Affect the Automobile

Within the next few years you can expect to find automotive brakes cooled by forced air, liquid, or sodium to stop heavier, faster cars. An electro-hydraulic braking system might be in general use before 1955.

Lighting may be done by sodium or other color-producing means to reduce glare by "color interference". Spark plugs for specific engines are in the experimental stage.

Next year's models will definitely see three-plane curved windshields, fuel injection, and compression ratios of at least 9:1 on four engines. And a turbine-powered automobile might be offered as early as 1955; several are already being tested.—Auto Ind, Apr 15, p18

Tape Recorders Now Have Many New Uses

Some unusual uses of the tape recorder were uncovered in a recent issue of Webster Electric Co.'s house publication, Ekotopics. Webster reported sales of recorders went over the million-dollar mark in 1952 and are still climbing.

Magnetic tape recorders are being used by The Combined Insurance Company of America in their comprehensive sales training program. Chrysler Corp. and Ford Motor Co. are using tape recorders to study noise inside operating vehicles.

A number of retail stores have recorders to supply background music or commercials in unusual "talking" displays. Some companies use sound recorders to accompany slide films. Advertising testimonials with real customers instead of actors have been especially good sales ammunition.

Inventory taking has been eased and speeded through tape use. A checker simply talks into the recorder as he takes inventory. Later the information is transcribed and filed.

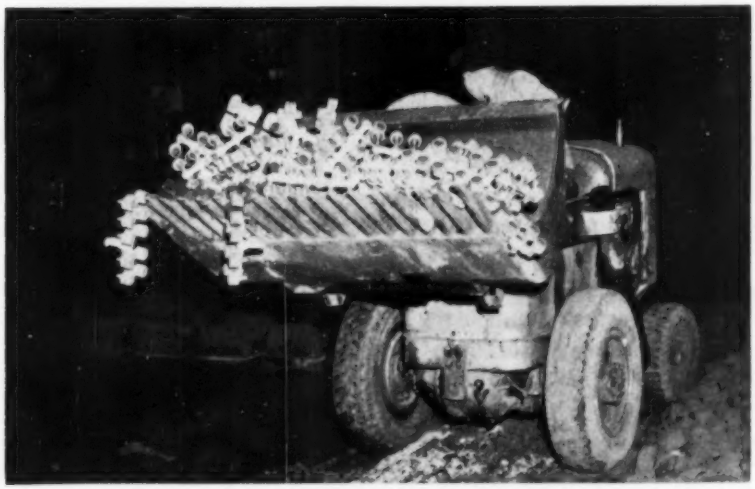
The recorder has proved a useful and accurate way to record conferences and meetings. In employee relations, the recorder has been a time saver and has reduced error. For example, new employees can be partially indoctrinated by tape recorder without the presence of a supervisor who would otherwise have to leave his own work. —Elec Whols, Apr, p114

New Gas Life for Solids

A new principle in solids motion underlies Hyperflow, a solids-lifting technique developed by Union Oil Co. of Calif. While the company has not released all details on how the method works, it is known that the solids move in a compact, unfluidized mass. Velocities of both solids and gas are low.

Hyperflow needs small volumes of lift gas (less than 10% of that for conventional methods) and high pressure differentials in the lift leg (50 to 75 lb. per sq. in. in a 100-ft. lift). It can lift particles ranging in size from dusty carbon black to 1-in. pieces of coke.

First commercial use of Hyperflow is in Shamrock Oil & Gas Corp.'s 1,000-bbl.-per-day continuous contact cooking unit. Soon it will be an integral part of Union's Hyperforming units. Stephens-Adamson Mfg. Co. will build Hyperflow units for use in common conveying systems.—Chem Eng, May, p138



Tined Scoop Handles Hot Castings

By adding long tines to a bucket, the William E. Pratt Mfg. Co. has cut the cost of handling hot castings. A Hough "Payloader", with special bucket, scoops up castings immediately after they are hooked out of molds, then dumps them into tote boxes. There is no waiting for castings to cool. Sand, picked up with the castings, sifts out between the tines.—Factory, Apr, p111

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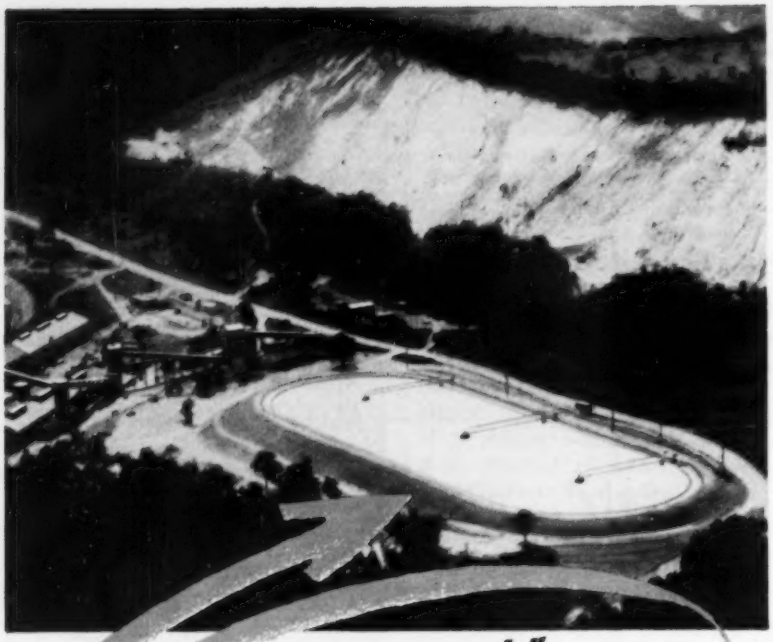

Now they "wash"
14½ million gallons
of water every day...

Suppose you're several million gallons short of the water you need. One good solution to the problem is the re-use of the water you have.

When Pennsylvania Glass Sand Corporation, Berkeley Springs, W. Va. had that very problem, they worked with Dorr engineers to build this 5-acre installation that recovers 14½ MGD of silt-laden water. Three 250′ dia. Dorr Torq Thickeners are installed in an earthen basin 775′ long by 275′ wide. Dirty water comes from a battery of Dorr Classifiers used for washing sand in the reduction building, then passes through a Dorr Hydroseparator for the removal of fine sand before final settling.

Whenever a process involves the separation of finely divided solids in suspension, the use of ion-exchange, or fluidizing techniques, Dorr and its Associated Companies throughout the world can provide the correct equipment for your job. THE DORR COMPANY, Barry Place, Stamford, Conn.

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Modern Quality Control Cuts Rejects and Costs

Modern quality control instead of product inspection cuts rejects and inspection cost at Standard Pressed Steel Co. The new system cut in-process rejects and reduced the requirement for inspection-quality personnel to less than half of what the company would have needed at current production levels.

Products of the company's fastener division—such as socket-head cap and set screws, and locknuts—must have the tightest interchangeable fit. Changing over to quality control, Standard Pressed Steel:

- **Switched** inspection emphasis to the materials, tools, and machinery that go into the products.
- **Made** machine operators responsible for the quality of their work.
- **Revised** methods of tool and gage control.
- **Reduced** in-process machine and bench inspection.—Factory, Apr, p138

Trencher, Grader Build Low-Cost Texas Roads

The road commissioner in Mitchell County, Texas, has come up with a simplified and economical method of building serviceable, stabilized sand-clay roads. In their natural state, Mitchell County roads are composed of wind-blown dune sand, overlaying a stratum of heavy clay.

Only two types of equipment are needed: a trenching machine and a motor grader. The trencher excavates and mixes the clay and sand, while the grader spreads the material over the roadway and compacts it.

Here is how the work is done: First, the roadbed is raised by blading excess dune sand to the center of the road. Sand and clay subsoil at both sides of the road is excavated by the trencher and windrowed. Then the motor grader fills the trenches with sand, blades and compacts the stabilized sand-clay roadway, and cuts side ditches for drainage.—Eng News-Rec, Apr 30, p40

Better Plants Are the Trend

Obsolete facilities and less need for expansion lead plant owners to look for more value for their money through better equipment, methods, and materials

A SHIFT IN EMPHASIS away from additional capacity to more efficient capacity is taking place in U. S. industry. That is what *Factory's* editors conclude in their 19th annual Plant Buildings Issue. The special issue brings together the new ideas in plant design and service facilities that are making so many old plants obsolescent. The Digest feels that many of these new ideas can fit into your plant and help you make your operation more efficient. So here are the trends in plants as *Factory* sees them and as we think they can help you.

Buildings and Grounds

Industry is paying more attention then ever before to the problem of plant location. For one thing, smart companies are giving plenty of attention to water supply. Supply and quality analysis, water table mapping, municipal source guarantees, pretreatment, post-treatment—all are important when picking new sites.

Availability of fuel is another consideration in picking a plant site. Natural gas has joined coal and oil as a fuel. New plants are springing up alongside gas pipelines.

Better preparation and better equipment for handling and firing coal are making it more attractive.

Plant expandability is essential. Practically all the better plants are being designed with that in mind. You need land, of course, and water, fuel, and power. But it will help if the plant was originally built with expansion in mind.

A temporary wall, larger service distribution lines, prepunched steel beams, proper location of services—these are some of the things companies are spending their money on now. They know they will save money when they start to expand.

Flexibility in plant layout will assure space for future needs. Bigger bays, higher roofs, and stronger floors will provide flexibility.

Low first cost is another trend. To get it, plant owners have frequently sacrificed architectural attractiveness, functional utility, and low maintenance cost.

Materials suppliers are developing new and better materials. At the same time, researchers and contractors are developing better and cheaper construction techniques.

Low-cost maintenance is being built into most new plants. This means owners have paid a little more for materials that will need little maintenance for years to come. Many of the newer construction materials are worth investigating. They can save you money with low-cost maintenance.

Better in-plant environment pays dividends for the new plants. To get at the dividends, plants are being built not only with better lighting, but also for better seeing. This is achieved primarily through effective use of color and light.

Noise is a real problem. It is being handled in the new plants mostly by isolation. Acoustical partitions and ceilings are doing the job.

Fast construction depends on excellent owner-architect-contractor liaison and on precise scheduling. Objective of this speed, of course, is to build faster and begin operating and earning sooner.

More office and engineering space is being built into the new plants. There are two reasons for this: (1) the amount of engineering needed to manufacture goods is increasing rapidly, and (2) the government is complicating the bookkeeping job.—Factory, May, pB2

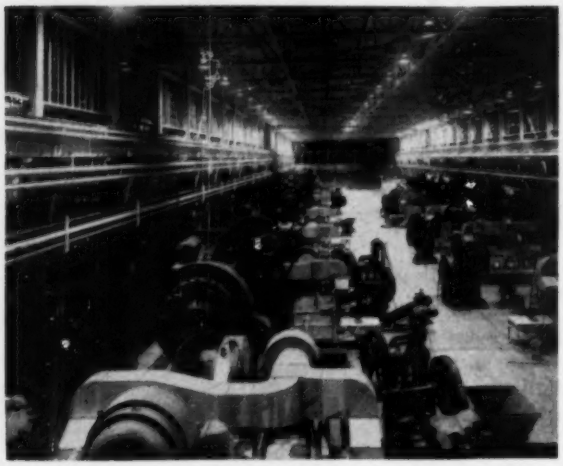
Turn the page for more ideas

HIGH BAY—40 ft.—provides great flexibility in final assembly area.

RIGID FRAMES fitted together easily, saved 6 mo. construction time.

EXPANSION was anticipated. White line shows bricked-in doorway.

Better Plants Are the Trend: Services Aim at High Efficiency



MERCURY LAMPS have incandescents for stand-by in case voltage dip causes mercury lamps to go out.

MODERN CAFETERIA is one convenience new plants ask for. This one has all-electric kitchen.

Plant Services

Costs are getting closer scrutiny in today's plants. But owners are not necessarily close-fisted with their money. In fact, they are more willing to spend money for plant facilities that will pay off in a better-quality product. And they pay for employee facilities that will result in higher productivity, lowered absenteeism, and smaller turnover.

Improved mechanical services and equipment feature the new plants. Plant operating executives are called in to take a hand in plans and specifications for new facilities. They evaluate the effect of new, improved equipment on the operating costs.

Better air handling is a must. The only question is: how good? Two factors control the answer: (1) product quality, and (2) employee productivity or welfare.

Factory editors were told that all major buildings should be designed with provision for full air conditioning. Air systems should be built for the future. It costs money to expand it. But you can balance initial cost against later savings.

Better employee facilities improve worker efficiency. The motive is good business, not altruistic. New plants are planning larger and better facilities—gatehouse time clocks, cafeterias, restrooms—to eliminate complaints about time lost waiting in line.

Higher lighting levels are a continuing trend. Where 35 ft.-candles were considered tops a few years ago, plant buyers now seek 50, 60, even 90-ft.-candles at working height for close work. And they want it without glare or shadow.

Better-planned water facilities are the trend. Not only do new plants seek adequate water supply, but they are looking into methods of water treatment, conservation and waste disposal.

CLEANLINESS was essential in this plant. Asphalt tile eliminates dust.

Three reasons are accelerating industry's interest in treatment of waste water:

- There are fewer and fewer places where you can legally dump obnoxious waste water.
- The cost of "new" water is often so high it is cheaper to reuse waste water than to throw it away.
- Recovery of some wastes makes reclaiming equipment profitable.

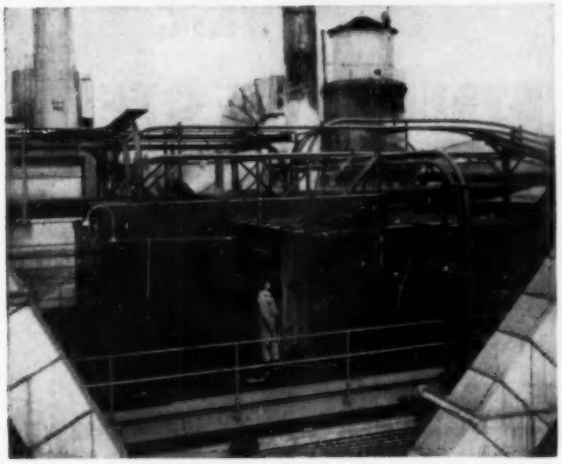
More instrumentation is coming. In a broad sense this trend means control, recording, and measuring instruments for humidity, temperature, pressure, volume, weight, quantity, chemical analysis, viscosity, liquid level—applied only to plant services.

Better protection of a plant and its people against fire, explosion, theft and sabotage is commonly accepted. New plants are turning more and more to automatic signaling and protective equipment. This cuts the bill for watchmen and minimizes the chances of human error where it can mean a catastrophe.

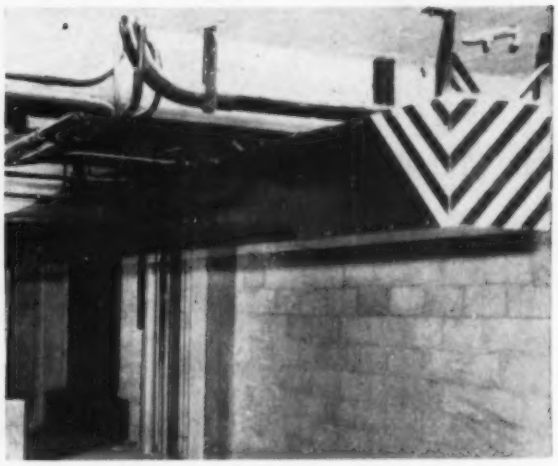
Consequences of air pollution from its stacks are being impressed on industry. As with pollution of streams by water wastes, the incentive for control of smoke, fumes, odors, and dust is partly social and partly economic.

The equipment for control of most kinds of air pollution is available.—Factory, May, pB78

Better Plants Are the Trend: Electrical Distribution Takes Planning



UNIT SUBSTATION is mounted on the roof of this new plant. Switchgear is outdoor type and is weatherproof.



METAL PULLBOX houses internal distribution cables. It allows easy access for servicing and repairing.

Electrical Distribution

Better power planning is needed for today's much heavier power usage. Most factories will get their power from the nearest power source. If you buy your power, bring the power company into plant planning early. Some plants are playing with the idea of generating their own power with excess steam from manufacturing processes.

High power loads will mean better protection against short-circuit currents. Adequate protection is requiring larger equipment, which costs more money. Better new plants are spending for whatever is needed.

High voltages are being handled in the plant in two ways: (1) transform the voltage at one point as received from the power company, then distribute this power throughout the plant, and (2) use load-center distribution, which is becoming the more popular system in new plants.

The load-center system employs high voltage, in some cases the same as supplied by the power company, and distributes this high-voltage power throughout the plant. All you need in the master substation is switchgear and metering. Unit substations at the centers of the electrical loads transform the high-voltage power to the utilization voltages. You distribute this low-voltage power to the various equipment where it is needed.

Load-center substations, the heart of the high-voltage distribution systems, consist of:

- Incoming line section or high-voltage side.
- Transformer section.
- Low-voltage feeder section.

Each part can be made up of different components according to individual needs in the plant.

More flexible circuit arrangements are a must. But regardless of the circuit you choose, service reliability will depend primarily upon adequate modern equipment, properly installed and maintained.

Better conductors are appearing. Today there is a trend away from lead-jacket cables. Cables are coming out of the ground and are being run along the ceiling and over roofs. Interlocked-armored cable is being used.

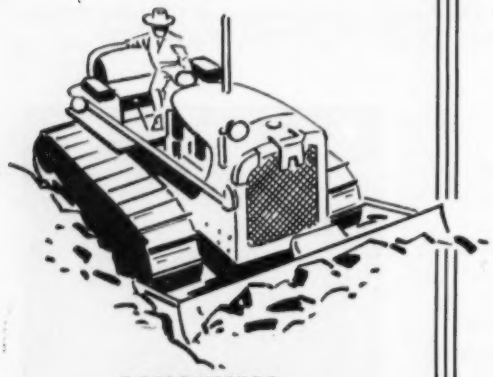
More use of d-c. power is showing up as a trend in new plants. Many machine tools and much process equipment need dc. You can use the same distribution methods as with a-c. power. Get your utilization power from load-center substations. Direct current can be supplied at these load centers by using high-voltage a-c. power to those points and converting the ac. to dc. at the load center. Motor-generators or rectifiers can be used.—Factory, May, pB198

NEW PLANTS feature clean, safe, and easy-to-service layouts.

MANY OLD PLANTS allow this unsafe wiring setup. It costs money.

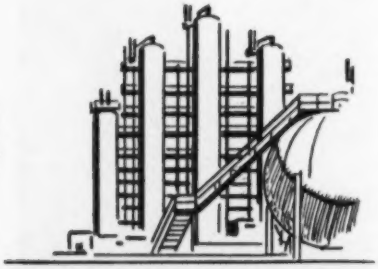
STRENGTH

HARDNESS



TOUGHNESS

HEAT-RESISTANCE



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REPRESENTATIVES IN PRINCIPAL CITIES OF THE WORLD

TECHNICAL SHORTS

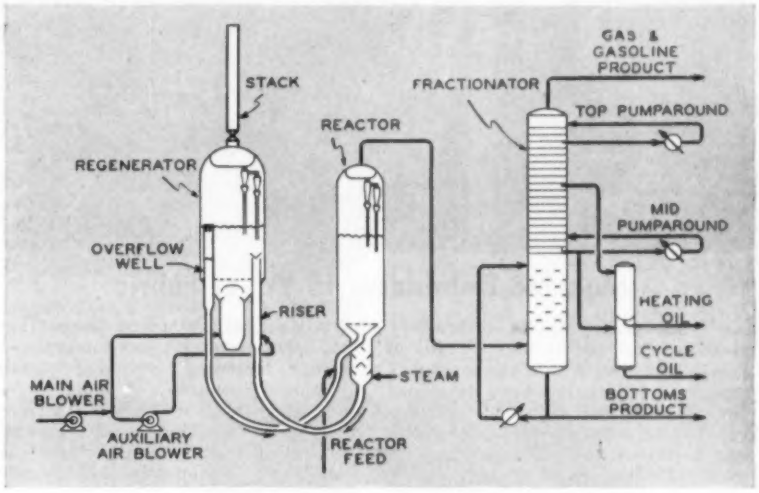
Efficiency Plus — World's first super-charged hydrogen-cooled steam turbine generator, made by Allis-Chalmers Mfg. Co. (McG-H Digest, Jan, '52, p40), finished first full year of operation with flying colors. Out of 8784 hr. in 1952, it was in service 8557 to establish 97.41% service factor.—Power, Apr, p238

Iron-curtain Textile Machines—Recent Leipzig Fair in Eastern Germany showed textile machinery had reached pre-1939 production standards. Improvement is continuing. Machines go to the Soviet Union and satellites. Some equipment is being manufactured in China for the Far East market.—Textile World, May, p124

Plastic on Glass—Thermoplastic made by Eastern Industrial Service, Inc., has been tested 3 years in a textile mill for cutting sun rays. When spraved on window glass, it filters out 95% of ultraviolet rays and 80% of infrared rays to reduce air-conditioning costs.—Iron Age, Apr 30, p117

Polyester Traps Dust — Brookhaven National Laboratory, atomic research center, has found that spray-coating 10-ton concrete blocks used to protect workers from radiation effectively controls concrete dust that might harm delicate instruments. Cost compares with paint.—Mod Plastics, Apr, p168

Pipeline for Coal Gas—Growing gas demands of Melbourne, Australia, will be supplied through a 90-mi. welded steel pipe line to be built from the brown-coal field of the Latrobe Valley. Gas manufacture by the German Lurgi process is expected to start in 1956. Open-cut mining operations and power plants are being doubled in the area. Brown-coal reserves are estimated at 27-billion tons.—Coal Age, May, p192



Fluid Catalytic Cracker Simplified

New low-cost fluid catalytic cracking unit has been announced by Standard Oil Development Co. First unit is in use in Canada, 20 others are being built. New system of catalyst circulation permits one-third lower profile. Feed stock is charged to regenerated-catalyst line; catalyst heat vaporizes liquid feed as mixture moves to reactor. Spent catalyst returning to regenerator is mixed with air to permit flow under own pressure head. Rate of air flow thus controls catalyst flow and catalyst-to-oil ratio. No throttling side valves are needed, operation is stable, and "reverse flow" is unlikely to take place.—Oil & Gas J, Mar 23, p167

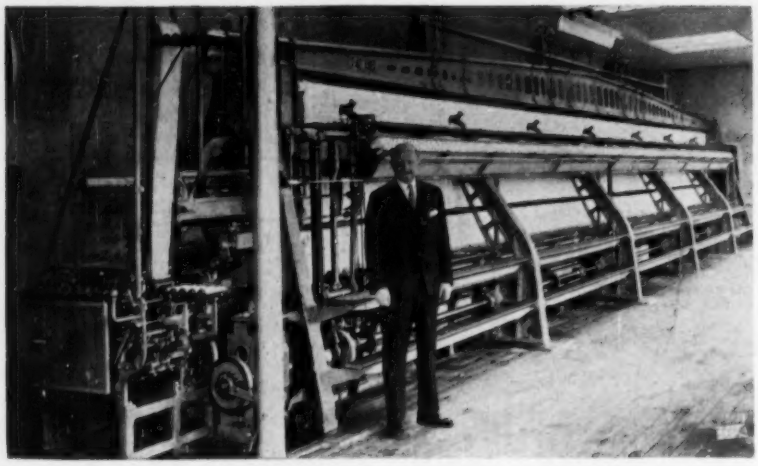
Market Switch—Growth of the supermarket in the U. S. has affected electrical suppliers in a big way. Last year's lamp bulb sales through grocery stores totalled 40%. One-third of this moved through 16,000 supermarkets. Figures showed the average housewife went to market 192 times a year, but only 7 times to an electrical store.—Elec Whols, Apr, p82

More Cold Storage Space—Armour and Co., meat packers, added cold storage space quickly and cheaply. It was done by converting refrigerator railway cars to permanent use. Trucks were removed and car set on platform. Insulation inside the car was increased. A 3-hp., 230-v., 3-phase refrigerator unit keeps temperature at 28°F., low enough to protect meat.—Elec World, May 4, p108

Enviable Record—Last year Australian domestic airlines carried more than 1.8-million passengers over a total of 40-million miles without a single fatal accident.—Aviation Wk, Apr 6, p7

Hobbing Huge Gear—Craven Brothers (Manchester) Ltd., England, hobbed a gear wheel of 26-ft. 5-in. dia. and 13-in. face width without regrinding the hob or stopping during either of the two hobbing operations. First cut took 120 hr., the second 105 hr. Hob was all-ground, inserted-tooth type.—Mach, Apr 18, p638

Arc Cuts Firebrick—Eutectic Welding Alloys Corp. has announced a new process, called Dynarc, that develops an electric arc hot enough to melt firebrick, stone, concrete, asbestos board.—Weld Eng, Apr, p5



Machine Embroiders 15 Yd. of Fabric

New automatic shuttle embroidery machine that embroiders 15 yd. of fabric at a time within the machine's length of 58½ ft. has been developed by Robert Reiner, Inc. The machine can handle cotton, nylon, silk, rayon, and acetate yarns. It is designed to give a 10% increased speed over the ordinary embroidering unit by means of a delicately balanced frame that can move either sideways or up and down. Increased spanning speed minimizes downtime. A motor drive rolls the necessary fabric up into position for embroidering. No rewinding from the top role is necessary as the fabric is self-aligning.—Textile World, Apr, p119

Chemical Plates Nickel to Metals and Plastics

Nickel plating by simple immersion in a chemical solution has been announced by the General American Transportation Co. Known as the Kanigen process, it deposits nickel to any desired thickness at 0.001 to 0.002 in. per hr. on thermosetting plastics, glass and any metal except lead, tin, cadmium, and zinc.

The bath is a solution of nickel salts (either nickel sulfate or nickel chloride) and sodium hypophosphite (as a reducing agent) in a plastic tank. Also added are a buffer and an ingredient that acts as an accelerator and inhibitor. The finished plate, a composition of nickel and nickel phosphide, normally runs between 5 and 8% phosphorus.

Metal surfaces are prepared the same as for electroplating; plastics and glass need special chemical treatment. After coating, the surface is rinsed and may be buffed to a high luster.

The coating is virtually free of pores, has high corrosion resistance, and a 600 Vickers hardness. It deposits uniformly, with no throwing problems. Complicated interior surfaces are plated without trouble. Coating adhesion is excellent.

The basic process, developed by the U. S. National Bureau of Standards, has been improved to make it commercially useful. General American is now setting up two plants to process work on a job basis. As soon as production problems have been worked out, the process will be available to other companies on a licensing basis.—Am Mach, Mar 30, p150; Chem Wk, Mar 28, p50

Titanium Passes Tests

U. S. Bureau of Mines tested galvanic-corrosion behavior of titanium when coupled with magnesium, zinc, aluminum, iron, copper, and stainless steel. Tests showed titanium's corrosion resistance to be high.

All other metals except stainless steel corroded in a 3% salt solution. When joined to copper in a hydrochloric acid solution aerated by helium, the titanium corroded. When air replaced helium, the copper corroded and the titanium was not affected.—E&MJ Met & Min Mark, Apr 23, p7

Cold Alaska No Problem for this Excavation Job

The contractors for a U. S. Air Force power plant in Alaska faced this problem: they had to excavate a 200 x 250-ft. area to a depth of 15 ft. in permafrost (permanently frozen ground). Then they had to thaw the permafrost to a depth of 20 ft. below the excavation.

And they had to do all this in a hurry. To meet the deadline, contractors Lytle-Green-Birch decided to carry on the project throughout the winter. That's not normal procedure in Alaska.

After excavation of the area to the desired depth, the contractors rigged a 240 x 360-ft. tent over the area and started operations under this shelter. Raising and lowering the tent compensated for weather and construction changes.

Three boilers supplied steam to unit heaters throughout the tent. Temperature stayed at 45°F., despite far-below-zero outside temperatures. Permafrost was thawed by 90°F. water circulated through wellpoints on 8-ft. centers. Thawing took more than a month, but was finished way ahead of schedule.—Const Meth & Equip, May, p80

Adds Life to Poles

Treatment of standing power-line cedar poles with a 5% pentachlorophenol solution made by Dow Chemical Co. will prolong pole life 15–25 yrs. In cases where the butts are in good condition, this inexpensive treatment can save thousands of dollars.

To apply the solution, linemen climb the pole to be treated and coat it carefully as they descend. The spray method is recommended and retention of 0.25 lb. of penta crystals per cubic foot is usual. This is the same specification used in full-length treatment of new cedar poles.

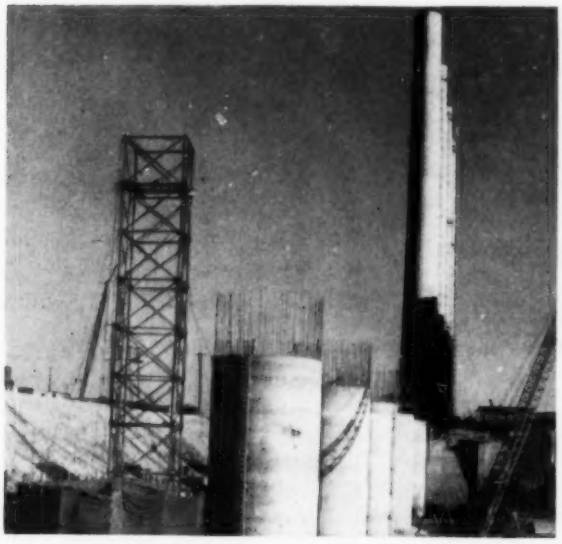
A recent application saved 90% of a string of standing poles averaging 27 years old. To replace these poles would have cost $60,000. Savings on this one job will pay for the pentachlorophenol treatment in **less than 2 years.**—Elec West, Apr, **p97**

Better Jacks for Slip-Form Method

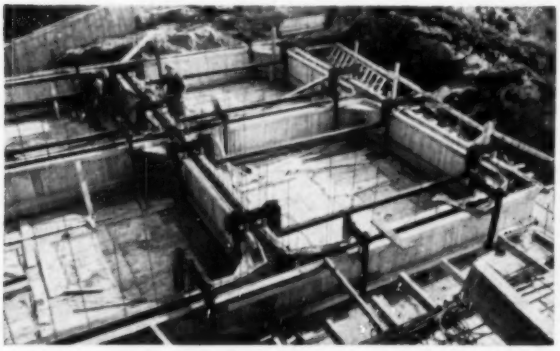
THE SLIP-FORM METHOD of placing concrete is not new, but new applications to irregular-design structures are appearing. B. M. Heede Co.'s Concretor System plays a big part in the new applications.

Heart of the Concretor System is its hydraulic jack. It raises slip forms by climbing up a smooth steel rod hand-over-hand like an ape. System simplifies lifting operations, cuts labor, and boosts lifting speeds. Here are some ideas of how the method has been applied.—Const Meth & Equip, May, p64

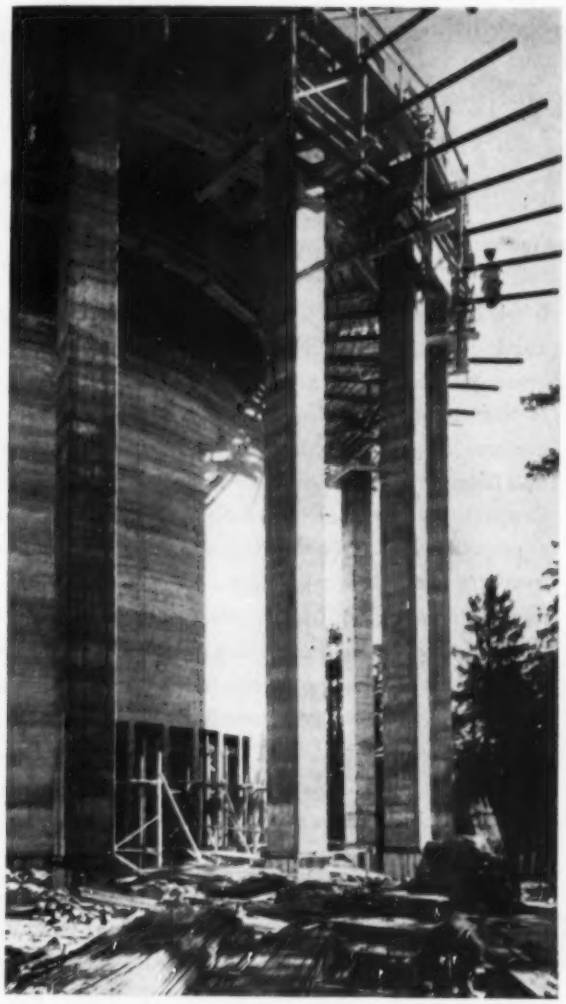
APARTMENT HOUSE in modified star shape grows steadily with slip-form concreting on a two-shift basis. Outer and inner walls, two columns, were poured at the same time. Piping and insulation were placed at same time.



MASSIVE PEDESTALS for steam-plant chimneys are cast with one Concretor. Machine and forms were lifted integrally from top of each finished unit to next base.

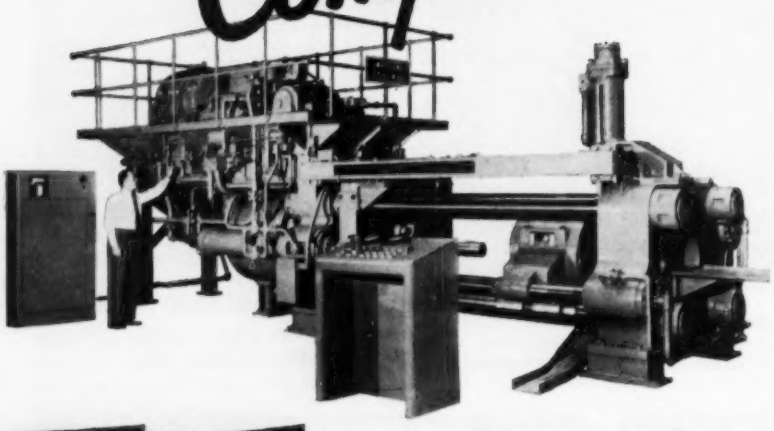


MULTIPLE RECTANGULAR CELLS are ready to rise with wood forms suspended from steel yokes to be carried up by one jack each. Yokes are tied together.



BIG WATER-TOWER FOUNDATION has center 100 ft. in dia., 20 outer pillars 4 x 4 ft. poured simultaneously 92 ft. high. Work platform later became reservoir floor form.

WE INVITE *Comparison*



Watson-Stillman 1250 Ton Aluminum Extrusion Press.

Send for Extrusion Bulletin 340-A

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ESTABLISHED 1848

If we suggest that you consult Watson-Stillman *first* on additional extrusion capacity, it's not with any thought of avoiding comparison.

In fact, here's an extrusion press *so* outstanding—in features, performance, and production—that we urge you to stop, look and listen to all other offers.

Only in this way can you fully appreciate the overwhelming superiority of this Watson-Stillman 1250 ton aluminum extruder over anything else in its class.

Seeing is believing. Don't decide on paper, or on the basis of reports one time or more removed from the source. Drop us a line and we'll arrange for you to visit one of the many leading plants equipped with Watson-Stillman presses.

Watch them at work. Talk to the men whose production and profits depend on Watson-Stillman Presses. You will understand why *Watson-Stillman Extruders Lead the Field.*

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Industry Preference Is For Watson-Stillman . . . The Finest Extrusion Presses In The Field.

Metalworking Shorts

▶ **Wet grinding** of carbide milling cutters with diamond wheels has increased wheel life six times at Boeing Airplane Co.'s Wichita plant. Other advantages are (1) convenient recovery of diamond chips from grinding sludge, (2) faster sharpening of cutters, (3) fewer wheels stocked.—Am Mach, Apr 13, p164

▶ **World's largest** split-die forging press, being built by Baldwin-Lima-Hamilton Corp., will have a 11,000-ton capacity, 130-ton bed, and 148-ton top moving platen. It will have piercing ram at top, knockout ram at bottom, and two horizontal side rams to clamp die. —Am Mach, Apr 13, p199

▶ **Fluid motor** on new Brown & Sharpe universal grinder controls wheel-head movement to 0.00005 in. Equivalent continuous motion would be 2 rpm.—Am Mach, Apr 27, p169

▶ **Keep tools sharp** is good advice for machining heat-treated aluminum alloys. Harvey Machine Co., Inc., has found that overheating from dull tools seriously reduces both tensile and yield strengths of the aluminum alloy—even up to 30%.—Am Mach, May 11, p209

Product-Design Shorts

▶ **Plastic coating,** developed by Armstrong Cork Co., can be brushed or sprayed on piping and equipment to protect and color-identify them. It withstands temperatures to 160°F., is odorless, and has high resistance to abrasion and water.

▶ **Underground corrosion** tests by U. S. National Bureau of Standards on hot-dipped galvanized pipe showed that 3 oz. of zinc per sq. ft. of exposed surface make steel corrosion-resistant. Specimens retained high corrosion resistance after coating had corroded away.

▶ **Magnetic brake,** developed by General Electric Co., keeps constant tension on wire or yarn by magnetic drag instead of friction. Alnico magnets create a drag that is constant at all speeds on the pulley. The brake will reverse the direction of rotation within a few degrees after the pulley stops.—Prod Eng, Apr, p5

Fats Find Plastics Outlet

Mountains of inedible tallow may rise as use of synthetic detergents soars. This possibility has led to hydroxylation of fats as a major development

EVEN THE THOUGHT of those rising mountains of tallow gives nightmares to soapers and fat processors. Last year alone, the surplus of inedible animal fats in the U. S. came to 700-million lb. That's a lot of fat. And this same thing can happen overseas as synthetic detergents take over soap markets.

The U. S. Department of Agriculture began its attack on the problem back in 1945 when one of its laboratories launched its probe of fat oxidation by peracetic acid. Two patents granted in 1951 attest to the success of the venture to find an outlet for the fat.

The USDA method involves the treatment of fats with hydrogen peroxide and acetic acid to yield epoxidized, hydroxylated and acetylated products. Type of product is largely determined by reaction temperature; high processing temperatures favor hydroxylation over epoxidation.

Two new products have just come to market as a result of USDA research. They are Baker Castor Oil Co.'s fat-derived vinyl plasticizers Estinox 203 and 206.

Estinox 203, a butyl hydroxy-acetoxy ester, is claimed to be the first commercially available synthetic hydroxylated fat. Estinox 206 is a butyl polyacetoxy ester intended as a low-cost secondary plasticizer for vinyl resins. Both esters are primary plasticizers for cellulosic resins and synthetic rubbers. Because of its epoxy content, Estinox 203 may be regarded as a vinyl stabilizer.

These claims are based on a cost of less than 40¢ per lb.: high compatibility with vinyl chloride, comparatively low volatility, good resistance to ultraviolet rays, stability to oxidation, and freedom from rancidity.

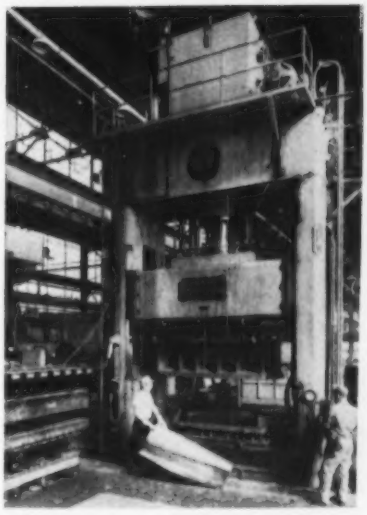
Two other companies also are licensed under USDA patents: Archer-Daniels-Midland Co. and Rohm & Haas Co. In fact, Rohm & Haas under its own process (which does not employ peracetic acid) has had a similar product, Paraplex G-60, on the market for 3 years. Paraplex G-60 is permanent, non-mitigating, compatible; it binds pigments and stabilizers during processing and in the final film. In tank-car lots, it sells for 36½¢ per lb.

Archer-Daniels-Midland has a new group of epoxidized plasticizers in pilot production. The initial product, described only as an epoxidized soybean derivative, is claimed to have these features: non-volatility, low extractability, good mill behavior, high heat resistance, low viscosity, good stabilizing properties, high ultraviolet resistance, and good low-temperature flexibility. It will be available in flexible sheeting and film, molding and extrusion compounds, plastisol and organosol dispersions.

Commercial potential of peracetic oxidation of fats is not limited to plasticizers. Hydroxylated and epoxidized compounds are possibilities for lube oils, cutting oils, synthetic waxes, textile oils, special metallic soaps, drying oils, cosmetic ingredients. Potential starting materials are fatty acids, esters, and triglycerides from animal and vegetable sources.

Baker Castor Oil Co. is now in semi-commercial production with a series of synthetic hydroxystearic acids. Offered first were dihydroxystearic and polyhydroxystearic acids. Principal uses are expected in the production of metallic soaps, cosmetics, greases, and cutting oils.

You can look for many more products from peracetic oxidation of fats. Even if the process does not move those growing mountains of tallow, it will provide a novel class of modifiers for the ever-growing vinyl-plastics industry.—Chem Wk, May 2, p40



AIRCRAFT gun turrets are preheated in furnace (left), then drawn

Zone-Heated Draw Dies Form Thin Magnesium

The deepest draws yet produced in thin-gage magnesium are being made by Emerson Electric Co. in drawing gun turrets and enclosures. The press being used is a 600-ton, triple-acting Fastraverse hydraulic press made by Hydraulic Press Mfg. Co.

The magnesium alloy, FS1H sheet, draws best at about 600° F., so Emerson wanted to hold the metal at that temperature throughout the draw. As a uniformly heated die does not heat the metal uniformly because of uneven surface contact, the temperature of different parts of the die is varied by adjustable gas burners within the hollowed-out die.

Thermocouples control die temperatures, with one in the draw ring, one in the pressure pad, and one in the punch. A surface pyrometer may also be applied to check temperatures. Cooling drafts over the dies are avoided.

Before drawing, the magnesium sheets are degreased, sprayed with a mixture of colloidal graphite and spirits to provide a lubricant, then preheated in a Lindberg electric sheet-stock heating press to 600° F. In some cases, sheets are preheated entirely in the draw die when it is more convenient to do so but press time is lost.—Am Mach, Apr 27, p129

HEARING TESTS given new and old employees as part of their physical examination show how well they hear at various noise levels

Poor vision and deafness are all too commonly regarded by industrial management as the workers' personal problems and as not suitable for aid by the company but Allis-Chalmers has found that its conservation programs have pointed the way to better . . .

Eyes and Ears in Industry

In 1949, Allis-Chalmers Manufacturing Co. started its "Better Vision and Eye Protection" program and followed it in 1951 with its hearing-test program.

Before the vision program began, all shop employees had been furnished safety glasses. But despite various promotional campaigns to get the glasses worn, an average of 400 minor eye injuries interrupted production every year. They cost the company plenty of money too.

The first corrective step, to make the safety glasses more comfortable, was to change existing metal frames of the glasses to plastic frames for all employees that preferred plastic frames. Then the program, by means of an Ortho-Rater, checked employees' visual skill.

The Ortho-Rater, made by Bausch & Lomb Optical Co., tests acuity, muscle balance, depth perception, and color discrimination. It was taken into each department in turn so time lost from the job would be kept low. Test results were recorded on IBM cards and analyzed by comparison with six standard occupational profiles.

An eye clinic was then established to offer corrective measures. When an employee already wore glasses with satisfactory correction, he was supplied safety glasses ground to his prescription. Those who did not have satisfactory correction were scheduled for refraction and then supplied the proper safety glasses.

Results of the program are indicated by the sharply falling rate of disabling eye injuries. For 7 years before the program started, there was an average of 4.5 injuries per million manhours. In the next 3 years, the average fell to 0.87.

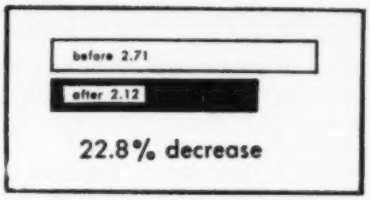
But what effect did the inclusion of prescription glasses have? The Ortho-Rater tests revealed that more than half the people tested had defective vision: 33.8% normal, 14.6% normal with glasses, 51.6% defective.

So a check was made on a group receiving prescription glasses for the first time. They suffered 22.8% fewer injuries in the following year than during the preceding year. To confirm this result, further tests were made with a control group of people that had passed the test and not received prescription glasses. In the corrected group, accidents *decreased* 19.7%, while the control group had an *increase* of 19.4%.

As the program was set up to reduce accidents caused by lack of protection or defective vision, no studies have been made to assess its effect on production. But here is employee opinion: 97% of a group that had previously worn glasses and 92% of a group that had received their first glasses believed the glasses helped them in their work.

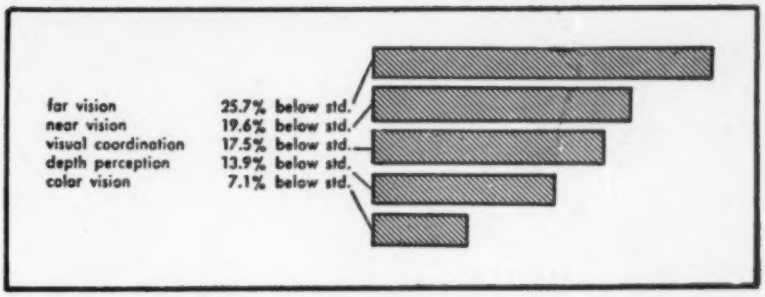
While the better-vision program was being established, the health and safety personnel at Allis-Chalmers became increasingly aware of the problem of industrial hearing loss. Finally, in 1951, a formal program of audiometric (hearing) tests was started for all new employees. Now underway are tests on all employees (to be made at the time of their periodic vision tests). The program now covers these four groups:

1. **All new employees** take a hearing test as part of the routine preplacement examination. Defective hearing is not regarded as



↑ Better-vision results

Types of defects →


far vision 25.7% below std.
near vision 19.6% below std.
visual coordination 17.5% below std.
depth perception 13.9% below std.
color vision 7.1% below std.

a bar to hiring. Instead, a man with a hearing loss is placed on a job in which his loss is not a serious drawback. These tests show that 27% of the people that apply at Allis-Chalmers for jobs have some hearing loss.

2. Workers in areas where the noise level is 90 decibels or higher are examined every 6 months or more often if necessary. A noise survey of the plant, made with a sound-level meter, permits study of hearing loss against noise level. And it may indicate what sound levels a person can be exposed to safely.

3. All workers exposed to hazards or who work off the ground are given hearing tests in their routine yearly physical examination. Such workers include welders, foundrymen, cranemen, and maintenance men.

4. Hearing tests will be given every 3 years to all other employees, including office workers and salaried personnel. This time schedule, and the others, may be changed as more experience is gained by the medical staff; at present, little authoritative data are available on industrial deafness and its causes.

When an employee shows a significant loss of hearing at a periodic test, some action is taken. It may be (1) reducing the noise at the job location, (2) providing some sort of ear protection for the employee, or (3) transferring him to a quieter job.

Noise abatement is still in its early stages. Some operations can be improved by use of rubber mountings, enclosures, or acoustical materials—sound-absorbing board, cones, sound reflectors, and similar devices. Keeping machinery oiled and well maintained reduces noise considerably. But noise abatement, at present, is not always a workable solution (McG-H Digest, Dec '51, p30).

Ear protection seems to be the best available solution. Two types are ear plugs and ear muffs. Allis-Chalmers is using only plugs, of which there are many varieties. They must be selected and fit carefully. The medical department does this job to assure a good fit, to educate workers in their proper use, and to help avoid the common practice of workers' using untreated cotton or other substitutes for ear plugs.

Job transfers present a major trouble. While it may be easy to transfer a man to a less noisy job, it is usually difficult to transfer him to one that he can handle and that carries the same pay rate. The company has found that, as far as industrial relations are concerned, job transfers are simply undesirable.

Can other plants do what Allis-Chalmers has been doing? They can, even though the actual procedure might vary from plant to plant, depending on number of employees, general noise level, and other local factors. Here are some worthwhile hints on what to do to set up your own hearing conservation program:

• **Don't spend** a lot of money for equipment unless the size of your plant or type of program makes having your own equipment desirable and economical.

• **Have your local doctor** make the hearing tests as he probably has the equipment needed or will be willing to get it. Arrange to have the tests given in the doctor's office or to have him visit the plant on a part-time basis to give the tests.

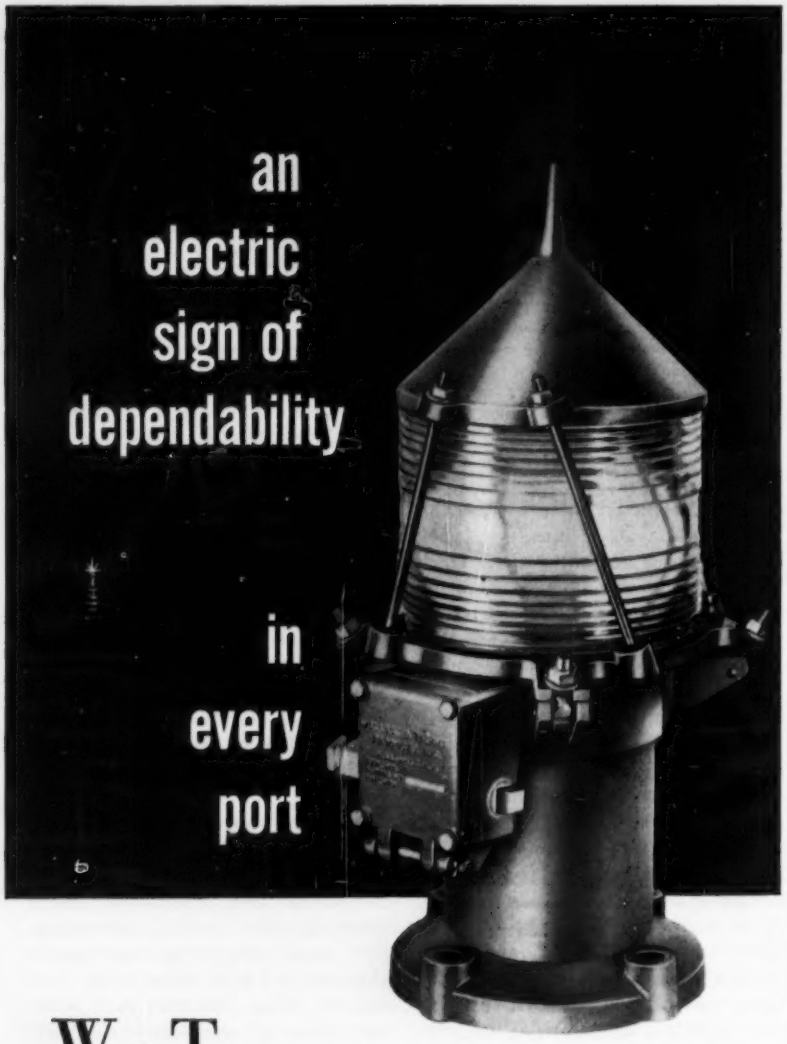
• **Many insurance companies** and government health boards make sound-level surveys either free or at a nominal cost. Many industrial-hygiene consultants can make these tests.

• **Buy equipment** if your plant is big or if you have a large number of employees to test. You can set up an audiometer room as part of your first-aid facilities. Take this precaution—design the room to have a fairly constant noise level under 50 decibels to insure accurate and consistent audiograms.

• **Train your own** audiometer technicians if you buy equipment. Tell them what noise is, how it is measured and evaluated. Give them practice on the audiometer, and make up written flow sheets that outline each step in the procedure. But remember that interpretation of audiometer-test results is a job for an expert.

• **Sell the program** to employees before you begin. Give your foremen and union stewards (if you have a union) advance notice. "Educate" them on the desirability of hearing conservation (and sight conservation, too) at your regular safety meetings. Tell your other employees about it by your employee publication or by any other means of communication you have found satisfactory in reaching your employees.

• **Give it** your whole-hearted support as top-management approval is necessary for a program that will give results. And for your efforts, you will not only help prevent hearing loss among your employees but also reduce future compensation claims and collect data to appraise claims fairly.—Am Mach, Apr 13, p192; Factory, Dec, p110



W & T electrically powered Aids to Navigation provide the rugged construction and precise workmanship necessary to ensure unfailing operation of strategic harbor lights. Watertight, constructed of anodized metals, and equipped with time- and laboratory-tested lampchangers and flasher mechanisms, W&T Buoy and Structure Lanterns ensure long life and dependable service.

Rugged construction, precise workmanship and unfailing operation—these are important factors which have helped make W&T electrically powered Aids to Navigation familiar, friendly sights in any weather in climates all over the world.

WALLACE & TIERNAN PRODUCTS FOR COMMERCE, INDUSTRY AND THE COMMUNITY:

Ammonia Control Apparatus—Cathodic Protection Systems—Chlorinators—Chemical Feeders—Decay Control Processes for Produce—Electric Marine Beacons—Flour Processing Chemicals—Magnetic Separators—Pharmaceuticals—Precision Instruments—Sifters.

F-94

AGENTS IN MOST COUNTRIES

WALLACE & TIERNAN CO., INC.

NEWARK 1, NEW JERSEY, U. S. A.

Device Quickly Checks Fumigation Efficiency

Commercial fumigators and food-handling concerns can test distribution of fumigants with a new instrument developed by the U. S. Dept. of Agriculture. Designed to work in buildings, chambers, or freight cars, the device will tell quickly whether the dosage in high or low. It will also tell if the commodity is properly aerated.

Principle of the electric resistance thermometer is used. The tester draws a sample of methyl bromide gas from any point in the fumigation room. Here it causes a change in current flow through a filament. Difference in gas concentration affects the current flow and measures the change.

USDA says that with adjustments the apparatus can be used to test gases other than methyl bromide. Gow-Mac Instruments Co. made the device for USDA and is now putting it on the market.—Food Eng, May, p201

Radio Finds Own Stations

A new tuning mechanism has been developed for automobile radios. It has been tested experimentally on television receiver antennae and may provide selective tuning.

This electronic device is operated by push button, either by foot or finger. When the button is pressed, the receiver scans the broadcasting spectrum and automatically stops when it encounters a signal. Every signal in the spectrum may be tuned in by pushing the button.

This type of tuner, besides its television possibilities, is particularly useful on high-speed automobile trips when local broadcast signals sometimes fade out within an hour.—Electronics, May, p154

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New Photographic Typesetter

Photographic composing machine needs no skilled operator. Punched cards instead of struck keys set type

SETTING TYPE by photography has been an ambition of publishers and printers ever since photo offset printing was developed in 1935. Most typesetter manufacturers have tried to make such equipment, usually by replacing the lead-casting process with a photographic technique. Some machines are in production, but many printers felt that the machines did not offer all the potential advantages of photo typography.

A new machine just announced may be the answer to the printers' needs. The Phototypograph Corp. of New York, from experience gained from building electronic business machines, has developed a photo composing machine that sets type from punched cards instead of keys struck by a skilled operator.

A relatively unskilled operator prepares the copy with a combination card puncher and electric typewriter. The typewritten version goes to the proofreader for checking, and the cards, with one line of type on each card, go to the photo composing machine. Stepping switches and relays in the card punch automatically space and justify the line.

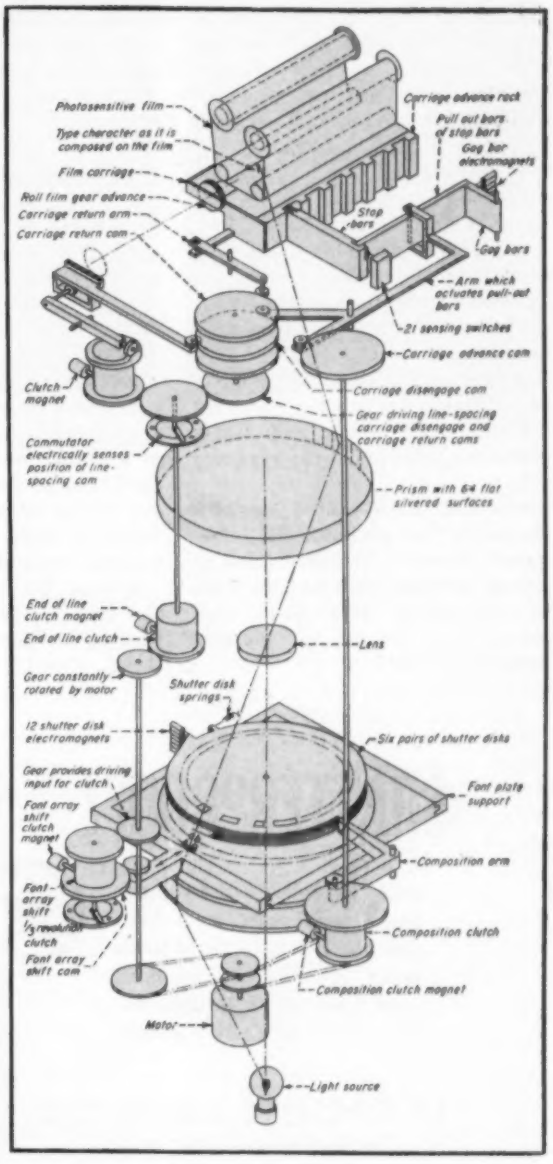
In the photo composing machine, the punched cards actuate relays that operate a series of shutter disks to permit photographing the proper letter at the right time. Light from the light source passes through the glass font plate on which the type is photographed. To pick the proper letter on the 160-character font plate, the shutter disks are moved so that aligned holes through the disk are opposite the chosen character. A circular prism with 64 flat silvered surfaces reflects the light to the film.

Processing of type starts with developing the film. The negative is stripped in the same way that photographs are now fitted into offset layouts. Finally, the negatives are used to make a plate, from which the final copy is printed.

Printers see many advantages in this type of machine. They will be able to reproduce finer and more intricate letters even with quite small type sizes. They are limited now by the thickness of line that can be cast in lead.

Cost cutting is a likely possibility. The machine will operate at top speed all the time because the type will be set by punched card, rather than by operator. Card operation will mean a rate of ten characters per second instead of the seven that a good linotype operator can set.

The machine will also permit a larger selection of type faces as the type font can be changed in seconds. Furthermore, an optical font will cost only one-fifth as much as a lead casting matrix because the optical type is photographed on glass while the lead matrix is machined out of brass.



The manufacturer expects that the new machine will set type wherever photo offset printing is used. It probably will not replace lead type in newspaper operations because of the longer time required for photographic processes. Book and magazine publishers will probably find it fast enough for their purposes and cheaper than present methods.

Phototypograph Corp. is building a prototype machine and expects to have it finished by 1955. It hopes to be in production and ready to market commercial models by 1958.—Prod Eng, Apr, p218

Protect Slab Floors From Frost, Dampness

The concrete slab on the ground method of floor construction in home building is getting more and more popular. But to be effective slabs must be properly designed and built. Here are a few rules for obtaining a good slab floor:

- Subgrade should be well and uniformly compacted to prevent unequal floor settlement.
- A coarse granular fill is then placed over the finished subgrade. The fill should be brought to the desired grade and then thoroughly compacted.
- Provisions should be made for embedding ducts for heating systems and supply and waste plumbing pipes under the granular fill.
- A stiff grout coat ½ in. thick placed on the granular fill is required where 15-lb. felt is used as a damp-proofing medium. Grout can be eliminated with 55-lb. felt placed over the fill and mopped with hot asphalt.
- Metal reinforcement should weigh not less than 40 lb. per 100 sq. ft. with equal cross-sectional area in both directions.
- A 1-in.-thick continuous waterproofed rigid insulation strip should be provided between the foundation walls and the edge of the floor slab.—Am Builder, May, p74

Coal Mines Yield Gas

Gas is being produced commercially from coal mines in Belgium and England by a technique that may prove useful in other parts of the world. The technique was developed in Belgium about 3 years ago as a safety measure.

Slanting holes of 2- to 3-in. dia. are drilled at 45° through the roof of a tunnel or overhand stope for distances of 300 to 450 ft. Holes are drilled soon after the stope is dug and while the coal above the stope is beginning to crack.

During the next few weeks as the coal is cracking, coal gas is pumped to above ground.—Oil & Gas J, May 11, p81

SHATTERPROOF!

Star "Molyflex"—the shatterproof high speed steel hack saw blade—cuts 5 to 10 times more metal than standard steel blades, yet is unbreakable when used in a frame.

CLEMSON BROS., Inc.
MIDDLETOWN, N.Y., U.S.A.

Makers of band and power hack saw blades, frames, metal cutting band saw blades and Clemson Lawn Machines

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U. S. Labor Glut?

Wassily Leontief: "U.S. economizes its capital and disposes of its surplus labor by foreign trade."

A NEW PROPOSITION has been tossed into the debate on U. S. foreign-trade policy. The proposition was presented recently to the American Philosophical Society by Prof. Wassily Leontief of Harvard.

Leontief discards basic and apparently common-sense assumptions about U. S. foreign trade that have been made by almost every economist. By applying his own statistical methods (input-output method, McG-H Digest, Feb '52, p42), Leontief found that the U. S. actually exports products that require less capital and more labor to produce than is required by the goods it imports.

From this he theorized that the U. S. does not have an abundance of capital compared to other nations, but is actually short on capital and long on labor. The U. S. is long on labor, he says, not because it has a large number of workers, but because the workers it does have are more productive.

Leontief concludes that the U. S. resorts to foreign trade in order to economize its capital and dispose of its surplus labor. Leontief backs this up by showing that it is not only the overall averages that prove his point. The statistics produce the same result in the majority of cases when broken down by commodity groups.

What is the explanation of this unexpected result? According to Leontief, it is the fact that American labor is considerably more productive than foreign labor. Thus, while the U. S. may have a greater investment of capital per worker than other countries, it has less capital invested per "equipment" worker. In other words, one man-year of U. S. labor is equivalent to, say, three man-years of foreign labor. Superior management plus the climate of production-oriented society is the key to the high productivity of the U. S. worker, according to Leontief. —Business Wk, Apr 25, p162

POLYETHYLENE tapes fit around odd shapes, are good insulators.

ACETATE plastic tapes provide strong, waterproof seal on cartons.

VINYL tapes apply easily, give high protection against corrosion.

New Plastic Tapes

Pressure-sensitive plastic tapes are finding new jobs every day. Their unusual properties make them ideal under extreme conditions

PLASTIC pressure-sensitive tapes are keeping up with the rest of the fast-growing plastics industry. Now more than 600 special-purpose adhesives are available. Different plastic backing, coatings, and methods of application can be combined to make a staggering variety of these tapes.

Vinyl is the most-used of the plastic backings. Its excellent electrical characteristics make it an ideal insulator. Vinyl tapes are highly resistant to acids, alkalies, corrosive salts, water, and greases. They are weatherproof, and they are tough enough to resist severe abrasion. Because the tape can be stretched from 150 to 200%, it can be pulled tightly over irregular surfaces.

Minnesota Mining & Mfg. Co. makes a series of tapes with vinyl, acetate-vinyl chloride copolymer backings. The thinner tapes in this series are used as separators for dissimilar metals. When pigmented, they make good markers for factory traffic lanes. The thicker tapes are used to keep wires, rods, and tubes in position.

Johns-Manville Co. also has a polyvinyl chloride-acetate tape, Trantex. It is used for wrapping pipe against corrosion.

Polyken Div., Bauer & Black, has developed a calendered, oriented polyethylene film for backing. The only other polyethylene film backing now being used is made by Minnesota Mining & Mfg. Co. It is an extruded, transparent film inert to practically all common commercial solvents and is used for sealing polyethylene containers.

Acetate film backings are the most versatile of the plastics. They are available in three different forms: fiber, cloth, and film.

The fiber backing consists of a sheet of acetate film laminated to a thin sheet of latex-treated paper. The resulting tape is thin—6.5 to 7 mils, and it has high tear and moisture resistance. Because of these features, this tape is used for sealing-tapes on packages, cans, cartons, and boxes. Adding color pigments to it makes it ideal for color coding.

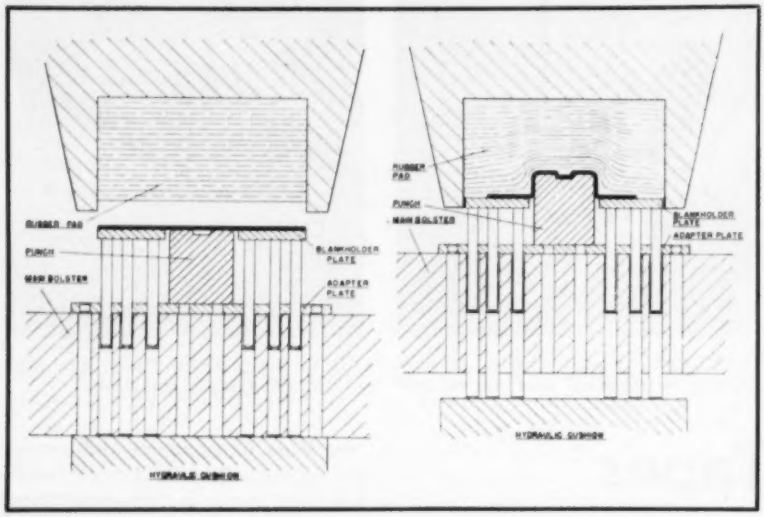
Woven acetate cloth is one of the best fabric tapes for electrical use. High temperature and humidity do not affect it. A typical 8.5-mil tape, made by Industrial Tape Corp., has an electrical resistance of 50,000 megohms at 96% relative humidity.

Acetate film backings have three outstanding characteristics: high resistance to electrolytic corrosion at high humidities; exceptionally high dielectric strength of 5,000 volts; and resistance of 67,000 megohms at 96% relative humidity. Tensile strength of acetate film tape is about 20 lb. per in. of width.

Polyester film tapes are made by only three companies: Minnesota Mining & Mfg. Co., Industrial Tape Corp., and Technical Tape Corp. For backing, they use Mylar, a polyester film made by E. I. du Pont de Nemours Co., Inc. Mylar has superior electrical characteristics. Polyester tape 2.5 mils thick has a dielectric strength of 5,000 volts. Tensile strength of tape this thick is 20 lb. per in. Under normal conditions, it can be stretched up to 50%. In some cases, it has stretched up to 120%.

The material is tough. It resists acids, alkalies, acetones, ketones, hydrocarbons, and other common solvents. It has good shock resistance and will stay flexible at low temperatures. Heat and humidity changes do not affect its dimensional stability.—Mod Plastics, May, p73

NEW PRODUCTS



Hydraulic-Press Line Designed To Deep-Draw by Hidraw Process

New method for deep-drawing metal parts by a combination of cushion and rubber-pad process is the Hidraw process developed by Consolidated Vultee Aircraft Corp. Hydraulic Press has announced a line of presses from 1,000 to 7,000 tons to handle both Hidraw and Guerin processes.

In the Hidraw process, the part is in contact with rubber and male die only, while the draw is being made. It gives uniform thickness and minimum stretching because the part is formed by fluid pressure rather than by an ironing operation. Tooling is inexpensive.

The blank is placed on the blankholder, which is flush with the top of the punch. As the main platen descends, pressure is generated in the rubber pad gripping the blank. As the platen continues down, pressure builds up and forces the blank over the punch. When the platen reverses, the blankholder remains in the down position until the pad clears the drawn part. Pull-back pressure to the die cushion ejects the part from the punch.

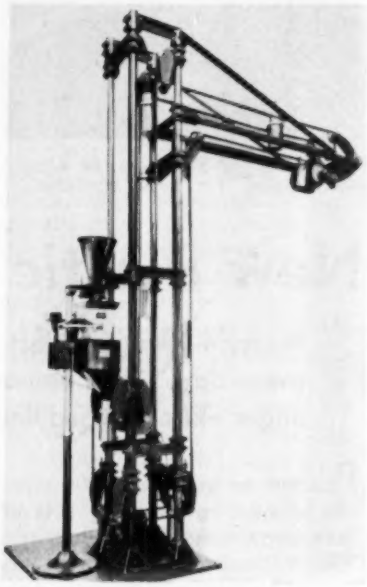
Pressure in the hydraulic cushion, which controls forming pressure, is adjustable in a preset stroke pattern. Rubber pressures range from 4,000 to 10,000 lb. per sq. in. Cushion travel determines depth of draw.

Presses are equipped with two- or four-station tables. Guerin forming can be done by placing a thin overlay plate over the pin-hole pattern in the top of the work-loading table.—**The Hydraulic Press Mfg. Co., Mount Gilead, Ohio.**—Am Mach, Apr 27, p182

Neoprene-Base Coatings

NeoCoat and NeoPrime are the neoprene-base paints used in new anti-corrosion coating system. In three coats, these paints will build up a thickness of 5 mils. The manufacturer considers this thickness necessary for best corrosion resistance and good service characteristics.

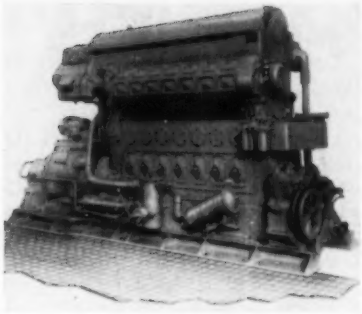
Different formula mixtures are available for coating all surfaces, including concrete. Maker says this covering is especially effective in the coating of welds, beads, seams, and edges where other paints fail.—**Pennsalt International Corp., 1000 Widener Bldg., Philadelphia 7, Pa.**—Factory, Apr, p206



Unit Weigh Conveyor

Designed for installation alongside of any size molding machine, a new unit weigh conveyor has been developed for the plastics molding industry. The conveyor automatically feeds accurate unit weights to the cavity of the molding machine, providing the advantages of weigh feeding in installations where it is impractical to install the weigher directly above the molding machine. The unit consists of a frame supporting a conveyor chain on which stainless-steel buckets are mounted. The standard model is equipped with six buckets.

An automatic net weigher is an integral part of the unit weigh conveying system. The weigher can discharge the exact weight for each mold.— **B. F. Gump Co., 1313 So. Cicero Ave., Chicago 50, Ill.**—Mod Plastics, Apr, p148



Opposed-Piston Diesel for Heavy-Duty Jobs

Although much smaller and lighter than conventional heavy-duty engines, model 38F5¼ opposed-piston diesel engine can handle big jobs. With a 5¼-in. bore and 7¼-in. stroke, the engine develops a continuous duty rating of 75 hp. per cylinder at 1,200 rpm.

Each cylinder has a pair of pistons operating in opposite directions. The upper pistons, controlling air inlet ports, are connected to an upper crankshaft. The lower pistons, controlling exhaust ports, are connected to a lower shaft. The two shafts, connected by a vertical quill shaft, transmit power through drive end of lower shaft.

Engines are complete self-contained units having all necessary auxiliary equipment.—**Fairbanks, Morse & Co., 80 Broad St., New York 4, N. Y.**—Oil & Gas J, May 11, p149

Grader Improvements

Offered as optional equipment, Allis-Chalmers 40-hp., tandem-drive Model D motor grader features front-wheel lean and power circle. Leaning the wheels increases blade maneuverability. Power circle turn provides precision control with a wide range of settings through its 135°.

During finishing of subgrade or black top, the moldboard can be rotated without disturbing the road surface. The toe of the blade can be swung well inside the front tire to give sufficient range for ditching.—**Allis Chalmers Mfg. Co., Milwaukee 1, Wisc.**—Const Meth & Equip, May, p188

Two Pumps for One

Two new gasoline-dispensing DUO pumps are capable of doubling the number of cutlets in any service station without costly changes in the islands.

DUO-1 has one pump, one air separator, and one motor for single-suction connection, but with two computers, meters, interlocks, and flow indicators. It has a ¾-hp. continuous-duty motor, capable of full operation in hottest weather.

DUO-2 has two complete and separate pumping systems, for use with different gasoline brands. —**Wayne Pump Co., Salisbury, Md.**—Am Auto, May, p70

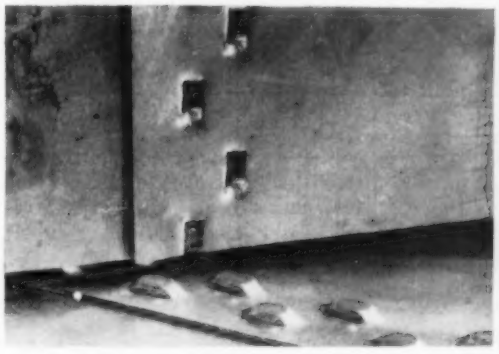
Deodorizing Lamp

Ozone-producing deodorizing lamp consumes 4 watts and emits 40 to 50% more ultraviolet radiation, converting more oxygen into ozone. Greater efficiency of the lamp is due to a bimetallic arching switch. Lamp requires no starter but operates off small choke ballasts. Ballasts are available for single lamp or two, three, or four lamps in series on 110- to 125-volt a-c line; or lamps can be ballasted by a 40-watt incandescent lamp in series.—**Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.**—Elec C&M, Apr, p205

Compact Electric Ranges

Low-priced Space-Saver ranges, 24 and 26 in. wide, provide complete services and same capacity as full-size models. For top-of-range cooking, surface units include two 6-in. and 8-in. and a 6-in. 1,600 watt extra high-speed unit. Push-button permits selection of five cooking heats.

The 24-in. range has one-piece base storage drawer with 1¾ cu. ft. capacity. The 36-in. model has similar base drawer alongside and a partitioned drawer beside oven for vertical storage.—**Int'l. General Electric Co., 570 Lexington Ave., New York, N. Y.**—Elec Whols, May, p125



Simple Method Fastens Metal Sheets

Metalacing literally buttons metal to metal. Method needs only a patented punch and yieldable die that can be attached to an ordinary punchpress. It can be used with any material that can be sheared, drawn, or upset. Picture on left shows top and bottom of 1/32 in.-thick sheet steel that has been Metalaced. Picture on right shows close-up of punch and die.—Crockatt Engrg. Co., Phelan Bldg., San Francisco, Calif.—Factory, May, p101

Bookkeeping Machine

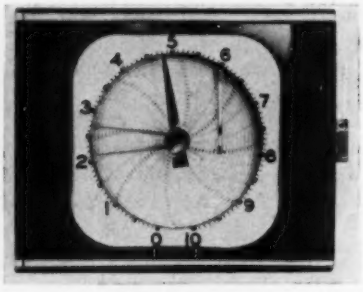
This is a complete bookkeeping machine in one unit. It has the standard typewriter keyboard, decimal position tabulation keys and electric carriage return. It handles all posting computations automatically and the five standard registers provide complete daily proof of posting and control figures. Column registers are designed for direct subtractions and may be added at any time. Ledger, statement, and journal can be posted simultaneously. Machine is in the low priced field—**Remington Rand, Inc. 315 Fourth Ave., New York 10, N. Y.**—Fleet Owner, May, p156

Electronic Wheel Balancer

Portable electronic wheel balancer consists of amplifier unit, pickup wheel spinner, weight drawer, and tool. Device corrects both kinetic and dynamic unbalance without removing the tire from the wheel. It balances wheel, tube, tire, hub, hubcap, trim ring, and brake drum and has dual range meter that permits sensitivity selection.—**Alemite Div., Stewart-Warner Corp., 333 No. Michigan Ave., Chicago, Ill.**—Bus Trans, Apr, p50

Home Air Conditioner

Year 'round air conditioning for homes containing up to 1,200 sq. ft. of floor space will be possible with new 2-ton gas-fired unit. New air conditioner is 75 in. high and requires only 8½ sq. ft. of floor space. Its gas-operated absorption unit provides quiet operation, long life, and low installation and maintenance costs. It is delivered complete, less its ductwork.—**Servel, Inc., International Div., 20 Pine St., New York 5, N. Y.**—Am Builder, May, p170



High-Speed Controller

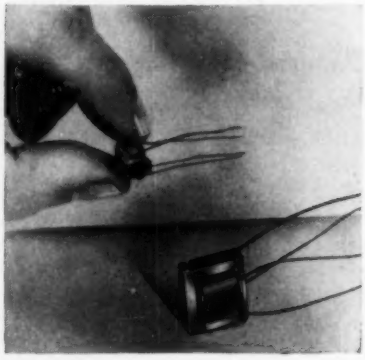
New round-chart recorder and automatic controller of high-speed, continuous-balance, null type can measure any variable that can be translated into an electrical quantity, such as direct-current voltage, capacitance, resistance.

The measured variable is recorded on a 12-in.-dia. chart and indicated on a circular scale. This instrument has the same features as the strip-chart instruments made by the company.—**Bristol Co., Waterbury 20, Conn.**—Prod Eng, May, p258

Silicone Weld Back-up

New silicone material, painted on the back of joints, serves as weld-backing compound. It is suitable for all arc welding except tungsten inert-gas. The compound is easily applied to complex shapes, and the powder residue left after welding can be removed quickly with a cloth.

Other advantages: no noxious fumes, non-explosive, no carbon pickup. A 1-lb. can of paste covers 1,300 ft. applied in ½-in.-wide strip.—**International General Electric Co., 570 Lexington Ave., New York 22, N. Y.**—Weld Eng, May, p93



Transistor Transformers

This ultra-miniature transistor transformer weighs less than 0.1 oz. It measures ¼ x ⅜ x ⅜ in., no bigger than the transistor itself. It is made of extremely fine wire, wound on molded nylon bobbins with special nickel alloy steel laminations. The transformer is useful below 1 mw. Others, built to individual requirements, are available.—**Standard Transformer Corp., 3580 Elston Ave., Chicago 18, Ill.**—Electronics, May, p302.

Lead-Cladding Machine

Cladding machine applies lead to steel with excellent bond and in one-tenth usual time. No separation will occur in service unless melting temperature of lead is exceeded. Machine weighs only 15 lb. and can be mounted on carriage running on surface to be treated or suspended from overhead.

Lead is laid over the surface to be clad. Cladding head then melts lead as it moves across the plate. It can handle lead strips up to 12 in. wide and ¼ in. thick—**Knapp Mills, Inc., 23-15 Borden Ave., Long Island City, N. Y.**—Chem Eng, Apr, p250

NEW PRODUCT BRIEFS

Saves Soldering Labor—Eutec-Tin Weld can save time, solder, and labor on soldering jobs. It is a low-cost, one-step, paint-on solder-paste-flux combination. To use, paint on Tin Weld along seam and then apply the piece to be soldered. Even a pocket lighter produces enough heat to get a good solder.—**Eutectic Welding Alloys Corp., 40-40 172 St., Flushing, N. Y.**—Eng & Min J, May, p110

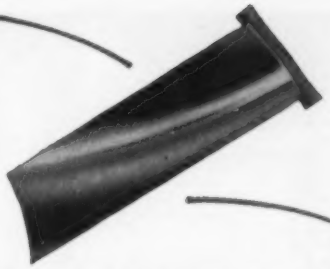
Artificial Casings—Artificial sausage casings have been developed to replace hog intestines. The new casings are made of epon-coated film and call "Controlled Moisture Vapor Permeable" casings. They are transparent and retain moisture-proofing ingredients even at high temperatures.—**Transparent Package Co., 3514 S. Morgan, Chicago, Ill.**—Food Eng, Apr, p194

Plastic-core Wire Rope—New type of wire rope has been developed for oil and gas well drillers who use the cable tool method. Rope is made by twisting several wire strands around a plastic core. Core gives resiliency and is unaffected by acids, caustics, and other subsurface substances.—**Jones & Laughlin Steel Corp., Gateway Center, Pittsburgh 30, Pa.**—Business Wk, May 2, p74

Grinding Wheels—New vitrified bond, G-Bond, helps hold abrasive grains just long enough to keep the wheel's grinding surface at peak efficiency. Maker claims these advantages for G-Bond: more work per wheel; cool, free, fast cuts; more pieces per dressing; and wide job range.—**Norton Behr-Manning Overseas Inc., Worcester 6, Mass.**—Ind Dist, May, p132

Heavy-duty Hose—Non-porous air hose is compounded of rubber, reinforced with rayon cable cord and covered with thick-wrapped rubber. It can withstand 450 lb. per sq. in. without "snaking", remains flexible at −40° F., and is available with ⅜- to 2-in. ID.—**H. K. Porter Co., Inc., 225 Broadway, New York 7, N. Y.**—Chem Wk, Apr 25, p 46

The airfoil form of a jet blade like this is automatically milled by



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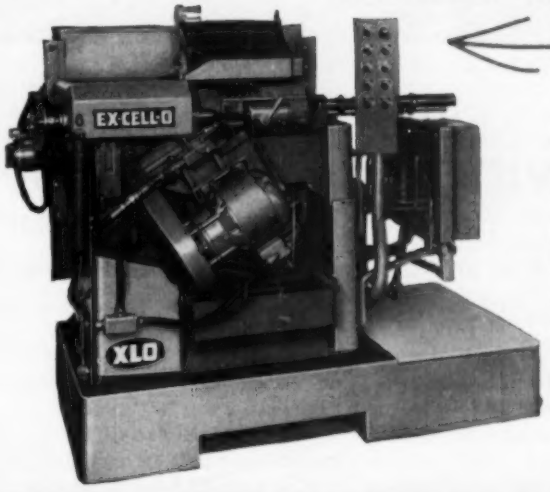

Style 86 mills the complete airfoil form including leading and trailing edges. Work is supported rigidly by back rests throughout the cutting stroke.

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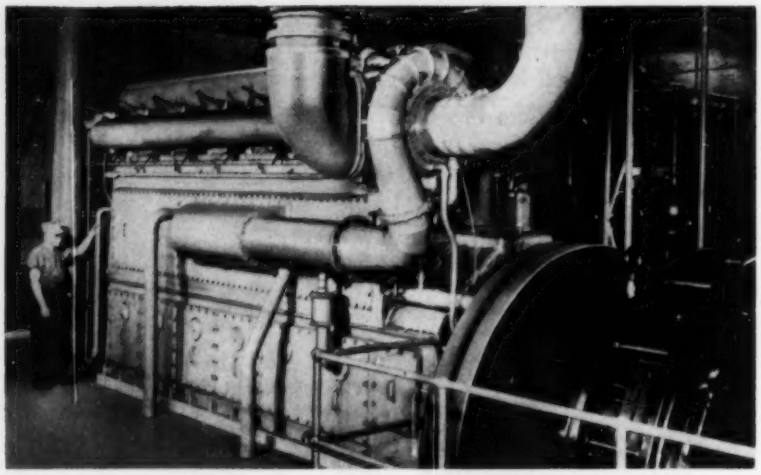


SPOTTING TROUBLE fast will add years to your diesel's lifetime

Improving Your Diesels

Here are five important questions on diesel engine operation that everyone who has one should know

• What are some main causes of corrosion wear in cylinders?

Carbonic, sulfurous and sulfuric acids form when fuel oil is burned. These are the most serious causes. Best way to fight them is to keep jacket cooling water high as possible. Also use lube oils with additives to fight your condition. High-sulfur diesel fuels will mean trouble in any type of diesel engine.

• What are some common faults to look for in defective fuel nozzles?

Incorrect spring tension is the commonest. Next is improper seating of injector valve. Check for stuck-nozzle valve stems and for erosion or grooving along stems. Inspect orifice for defects. Often nozzle tips are clogged or carbonized.

• What are the best safeguards against fuel-nozzle troubles?

Most nozzle trouble comes from dirty fuel, not from breakage. You must use clean fuel. That means filtering or centrifuging. Next, use two- or-three stage filtering system between fuel-supply pump and injector pump. While engine is running, drain filters and strainers of condensed water at regular periods.

• When bearings fail, should you replace one pair or complete set?

It is usually best to replace the whole set. They are relatively cheap to replace compared to heavier engine parts that may fail if bearings are faulty. Always repair bearings immediately; if ignored too long, they can give serious trouble that may result in prolonged downtime.

• Where do knocks occur in diesels and what are some causes?

Knocks often develop in large bearings, valve gear, or inside diesel cylinders. Bearing knocks come from too much clearance. This may be from wear or overheating after bearing metal fails. Valve gear may knock because of excessive rocker-arm roller clearance, broken rollers, or sticking valve stems.

Knock inside cylinder is from too early injections, excessive spray-valve lift at low speeds, spray air pressure too high, or from stuck piston rings. Another knock might be from water in cylinder if liner or head is cracked. —Power, May, p116

Air-Freight Cost Cut By Lightweight Wood

Tekwood, a new wood-paper product, has been developed by U. S. Plywood Corp. for shipping containers. The lightness and strength of boxes made with Tekwood make them especially suited for use in air freight, where they are capable of eliminating half or more of the weight usually lost in packaging.

Tekwood consists of a thin hardwood bonded to kraft paper and mounted on a wood frame. Its strength-to-weight ratio is said to be higher than plywood of the same thickness; its weight is from one-half to one-fourth that of plywood commonly used in packaging. When used in place of lumber, it has cut weight by 80 to 90%.

Tekwood is being tried also in die blankets for drop-hammer beds. It is said to enable more precise forming of sheet-metal parts at lower cost than the softer neoprene padding it replaces.—Aviation Wk, Mar 30, p69

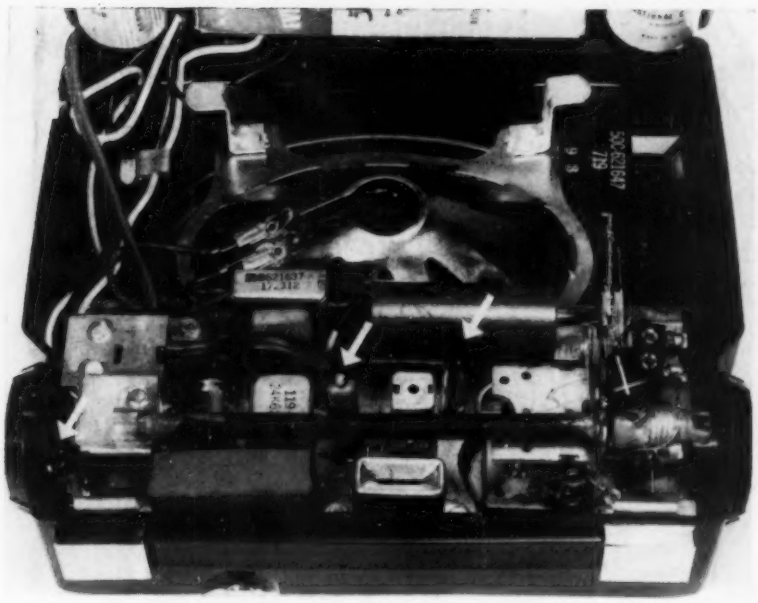
High-Speed Welding

Manual Argonarc welding process offers the advantages of a consumable electrode and automatic regulation, coupled with an inert-gas-shielded arc. These result in high welding speed and ease of operation.

The process uses a high direct current (electrode positive) of 50,000 amp. per sq. in. on a continuously fed bare wire electrode of small diameter. The high current gives fast deposition. Projection of metal across arc makes the effect of gravity barely noticeable.

Filler wire is fed from a reel through a cable, which also carries argon gas. Pressing the trigger of the gun switches current on and starts argon flowing. Striking arc starts the wire feed. After the arc is struck, it is governed automatically by the burn-off rate of the wire.

Use is simple. The main difference in technique from ordinary arc welding is the necessity to move along the joint at a faster rate. The equipment is made by the British Oxygen Co., Ltd.—Mach, Apr 25, p688



Portable Clock Radio Uses Subminiatures

To reduce battery drain, Motorola, Inc., has used subminiature tubes (arrows) in this new portable clock radio. The unit operates from two 1½-volt A batteries and a 67½-volt B battery, or from 117 volts ac./dc. Magnet and associated components are within cone of loudspeaker, saving still more space—Electronics, May, p8

Why Welded Ships Fail

Weld failures in welded ships are caused, according to the U. S. National Bureau of Standards, by notch brittleness, particularly at low temperatures. A study of fractures in ships showed that the starting point of a fracture could be traced, invariably, to geometrical or metallurgical notches.

Notches in ship construction can result from structural or design details, fabrication processes, or welding defects. For example, the source of a number of fractures was found to be a discontinuity in a longitudinal stiffener welded to the shell plate within a few inches of a transverse bulkhead. The stiffener was interrupted for a space of about 6 in. and was attached to the bulkhead by gusset plates. This condition constituted a structural notch.

Practical solution of the notch problem appears to be a combination of better design, care in fabrication and welding, and improvement of steel with respect to notch sensitivity.—Weld Eng, May, p39

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MANAGEMENT REPORT

Is your accident rate high? If so, take a tip from Bethlehem Steel Co. In the last 12 years, Bethlehem plants have won 11 first safety awards in its division. In 1951, its accident frequency rate was 1.85 injuries per million man-hours of work, compared to 4.5 for the steel industry as a whole and 9.06 for all U. S. industry.

This fine record is no accident. It stems from (1) adoption of good housekeeping and safety as company policy, (2) stress by management on orderliness and maintenance, (3) employee education aimed at encouraging good housekeeping, and (4) specific routine aids planned for cleanliness, safety, and maintenance.—Iron Age, Apr 2, p96

Three reports on U. S. industries—pulp and paper; paint, varnish and printing inks; and plastics materials—have been published in France. Pates-Papiers is a 118-page report by a mission that visited the U. S. and studied the paper industry.

Peintures Vernis et Encres d'Imprimerie is a 170-page report of a French mission composed of employers and workmen. It describes basic materials, manufacturing and inspection methods, laboratory research and safety measures in U. S. paint factories.

U. S. techniques, organization, social and economic structure, and production in the U. S. plastics industries are treated in a 95-page report, Plastics Materials. All three reports are on sale at S. A. D. E. P., 11 rue du Fbg. St. Honore, Paris.

Too much light in the plant without proper painting can add to glare and eyestrain. One American manufacturer found that out when he installed a battery of fluorescent lighting fixtures and painted the walls a gay yellow. So he called in a color specialist to find the trouble.

Painting the walls with a light reflectance of 75% caused bothersome light and dark contrasts with the dark machinery and floors with 2 to 5% reflectance. The solution: subdue the walls with light green for upper walls and medium green for lower walls, brighten the working areas of machines with a light buff color, paint rest of machines deep gray-green and the floors gray.—Iron Age, May 7, p142

The furor over three-dimensional movies in the U. S. is beginning to show signs of international complications. The U. S. Society of Motion Picture and Television Engineers was warned by British motion-picture engineer Dr. Leslie Knopp that American motion picture producers stand in danger of losing world markets for new large-screen presentations.

It seems most motion-picture houses throughout the world are physically unable to accomodate the large screens required. Dr. Knopp's appeal was for an immediate aproach to the problems of international standards. As a start, questionnaire's will be circulated to movie houses in England, the Continent, and U. S. to find out just what size screens they can accommodate.

New information service has been established by Battelle Memorial Institute, Columbus, Ohio. Battelle, a noted research center, is adding the service to help industry tap published knowledge and save time and money in doing so. The institute will cater to individual needs by preparing bibliographies and coding and classifying specific technical subjects.—Prod Eng, May, p225

A new publication has the answer to end-use performance of rayon, acetate, and the newer "miracle" fabrics. It contains 51 end-use standards that set up minimum performance requirements.

Standards will assure buyers at all levels of specified quality, enabling them to assure the consuming public of what to expect from fabrics regardless of what fibers they are made of. American Standards Association, 70 E. 45 Street, New York, N. Y. publishes the standards. They are called American Standard Minimum Requirements for Rayon and Acetate Fabrics.

The new look in annual reports was shown by Westinghouse Electric Corp. to its employees. It was a neat little checkbook for each person on the payroll. The purpose: to explain the company's record of 1952. The checks—all filled-out—show the usual annual report figures in a new perspective.—Factory, May, p84

PRODUCTION IDEAS

from Manufacturers' Catalogs

Bus Duct—Brochure B-4271Z-Int. gives complete information on bus ducts for trunk lines, outside use, and low-impedance duct for long feeder runs.—Westinghouse Electric International Co., 40 Wall St., New York 5, N. Y.

Glass—"Glass, its increasing importance in product design" describes the many advantages of glass in piping, heat exchangers, and other plant equipment.—Corning Glass Works, Export Dept., 119 West 57th St., New York 19, N. Y.

General-purpose Presses—The many uses of general-purpose presses in plastics molding, laminating, metal forming, etc. are covered in Bulletin Sheet 370-D.—The Watson-Stillman Co., Div. H. K. Porter Co., Inc., Roselle, N. J.

Grinding Mills—Data on complete installations for any type of grinding is given in bulletin 07B6718A.—Allis-Chalmers Mfg. Co., General Machinery Div., Export Dept., Milwaukee 1, Wisc.

Industrial Scales—How to control costs by use of right scale at right place in receiving, processing, stock, and shipping is told in catalog M-10.—Toledo Scale Co., Toledo 1, Ohio

Cigarette Maker—Literature is available on the AMF Standard cigarette-making machine, which produces at rate of 1,250 per minute.—American Machine & Foundry Co., 479 Fifth Ave., New York 17, N. Y.

Purchasing Control—"How To Find Purchasing Facts Faster with Kardex" tells how you can have a single source for all data.—Remington Rand, Inc., Int'l Div., 315 Fourth Ave., New York 10, N. Y.

Oilifts—Catalog describes operation and uses of Oilift installations in factories, hospitals, warehouses, theaters, and night clubs.—Globe Hoist Co., 1000 E. Mermaid Lane, Philadelphia 18, Pa.

Thread Grinder—Bulletin 48824 illustrates style 36 precision thread grinder and its extra equipment. Specifications and floor plan are given.—Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit 32, Mich.

Farm Tractors—W-4 standard tractor is featured in catalog E-87-B. Included are specifications covering the W-4 and other tractors.—International Harvester Co., Harvester Bldg., Chicago, Ill.

Industrial Chain—Photographs of typical applications of ⅜-in.-pitch silent chain are given in book No. 2510.—Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

Infrared Heat Lamps—Bulletins describe and picture many uses for infrared heat lamps in the home and on the farm.—Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

Industrial Sanitation—Equipment and methods for modern water purification, sewage treatment, and industrial-waste treatment are covered in bulletin 6042.—The Dorr Co., Stamford, Conn.

Conveyors—Catalog 851 gives specifications and selection table for spiral conveyors. Catalog 852 gives complete data on belt conveyors.—Jeffrey Mfg. Co., Columbus 16, Ohio.

Microfilming—Form MF-1005 describes Burroughs microfilming process, using Bell & Howell equipment, for protecting vital business records.—Burroughs Adding Machine Co., 6071 Second St., Detroit 32, Mich.

Magnetic Drum Separators—Permanent non-electric magnetic drum separators for removing ferrous materials from chemicals, food, grain, plastics, minerals, rubber are described in bulletin B-601.—Eriez International Corp., Erie 2, Pa.

Seismograph Explosives—Booklet describes explosives and allied equipment used for seismic exploration for oil.—Atlas Powder Co., Wilmington 99, Dela.

Steam Specialties—Engineering data on steam traps, strainers, regulating valves, separators, and traps is given in catalog 68E.—Strong, Carlisle & Hammond Co., 1392–1394 West Third St., Cleveland 13, Ohio

Chemicals—"Products and Services Manual" contains a listing and description of the products and services offered to industry and agriculture.—American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.

Tool Steels—Technical Bulletin No. 2 covers non-deforming tool steels for intricate cold work. No. 6 gives data on water-hardening tool steels for cold work.—Atlas Steels Ltd., Welland, Canada

Acetylene Generators—Bulletins in both English and Spanish give data on stationary and portable acetylene generators.—Sight Feed Generator Co., West Alexandria, Ohio

Packaged Slasher Drive—Bulletin GEA-5711 describes multi-motor packaged slasher drives for the textile industry.—International General Electric Co., 570 Lexington Ave., New York 22, N. Y.

Molding Machines—General catalog illustrates and gives data on versatile molding machines.—Tabor Mfg. Co., Drexel Building, Philadelphia 35, Pa.

Insulation—Two catalogs cover complete line of industrial insulation and insulation sundries. Materials cover range from 300° below zero to 2800° F.—Armstrong Cork Co., Lancaster, Pa.

Germicide—Typical disinfectant formulations of Santophen 1 germicide, effective against a wide variety of bacteria and fungi, are contained in bulletin.—Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo.

Steel Tanks—Catalog pictures many steel products from oil tanks and farm equipment to steel respirators.—Columbian Steel Tank Co., P. O. Box 4048V, Kansas City, Mo.

Can-making Machinery—Catalog 36-A illustrates and gives specifications on can- and container-making machines.—E. W. Bliss Co., 1375 Raff Road S. W., Canton, Ohio.

Leather Products—Descriptions, characteristics, and installation data on leather belting and industrial leather products are given in form A-200. Alexander Brothers, 406 N. Third St., Philadelphia 23, Penna.

Solderless Terminals—Catalog 30052R is indexed for quick reference to all A-MP solderless terminals and connectors by wire sizes.—Aircraft-Marine Products Inc., 2100 Paxton Street, Harrisburg, Penna.

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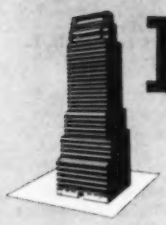

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This treatment covers every aspect of modern paper making; construction, design, operating aids, improved drives, ventilation, machine operation, coating, laminating, finishing, testing, and others are dealt with thoroughly.

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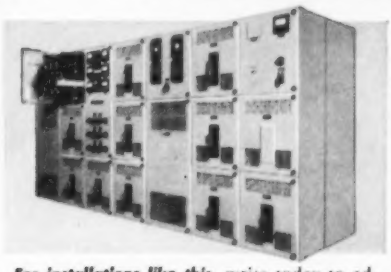
Westinghouse low-voltage switchgear for indoor or outdoor installations is designed for interrupting capacities from 15,000 amperes to 100,000 amperes, in continuous ratings from 15 to 6,000 amperes, for any ratings up to 600 volts.



For installations like this, write today to address below for free booklet B-5282 to determine your switchgear needs. Westinghouse engineers are also at your service.

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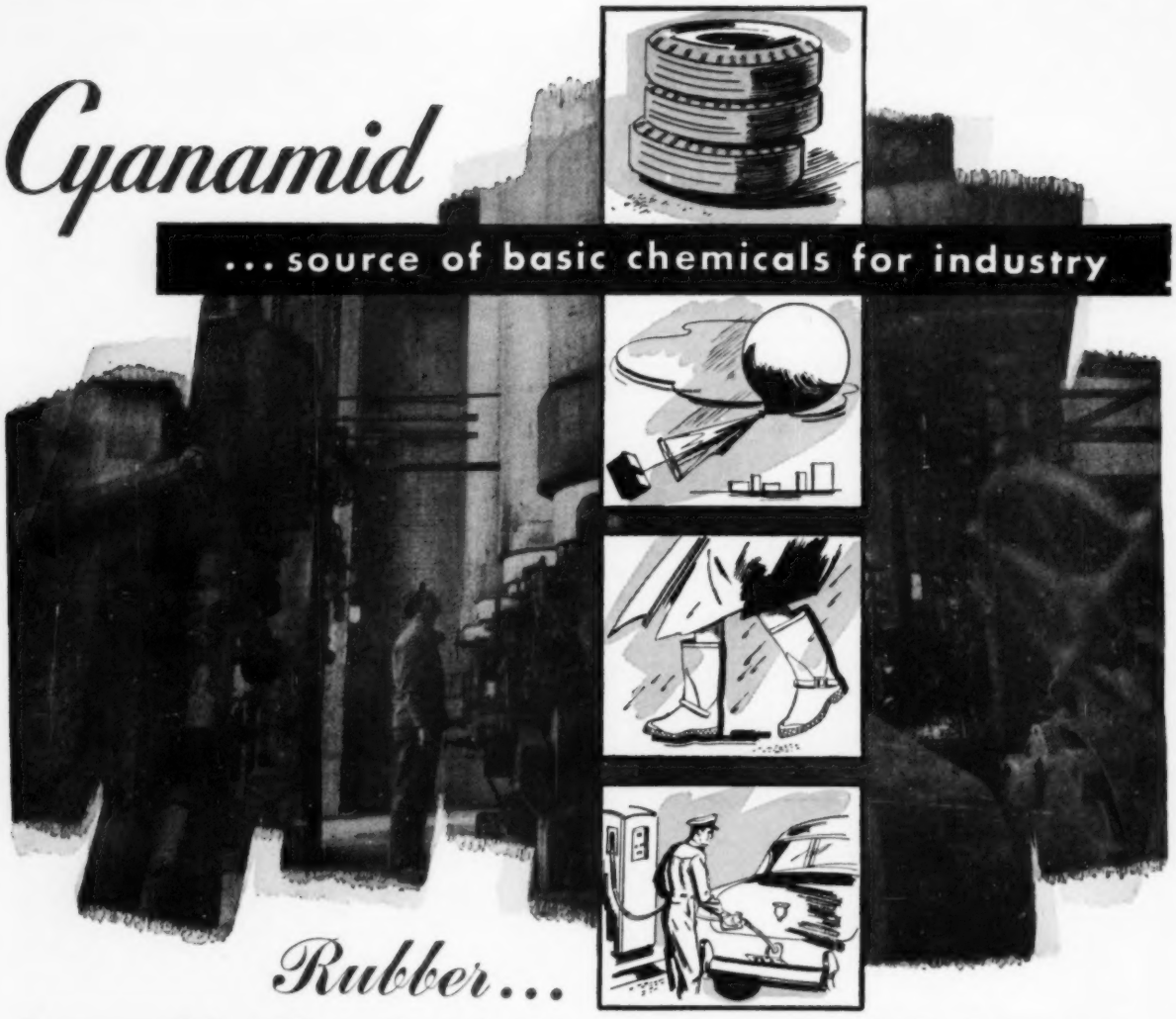

Rubber...

Cyanamid rubber chemicals and specialties help improve processing, quality and utility of rubber products

Cyanamid's extensive range of chemicals and pigments for the rubber industry help processors make more durable, more attractive rubber products.

ACCELERATORS

Thiazole Types—MBT Mercaptobenzothiazole; MBT-XXX, specially refined—odorless; MBTS Benzothiazyldisulfide; NOBS* No. 1 Accelerator.

Guanidine Types—DPG Diphenylguanidine; DOTG Diorthotolylguanidine; Accelerator 49.

ANTIOXIDANT

Antioxidant 2246,* for white and light colored stocks, non-staining—non-discoloring.

PEPTIZER

PEPTON® 22 Plasticizer, non-staining catalytic plasticizer for natural rubber and GR-S compositions, to increase plasticity and improve processing.

RETARDER

Retarder PD—modified phthalic anhydride to reduce tendency of rubber to scorch during processing.

STIFFENING AGENT—CALCO® S. A.

AERO* ACRYLONITRILE

—for the production of nitrile-type synthetics, contributing resistance to greases, gasoline, light, heat, abrasion.

SULFUR—rubber maker's grade.

CYANAMID ZINC STEARATE—dusting agent.

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UNITANE® Titanium Dioxide, Anatase and Rutile Types, add brilliant whiteness, superior hiding power, durability.

CALCO® PIGMENTS

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Products are not offered in countries where adversely-controlled patent rights exist.